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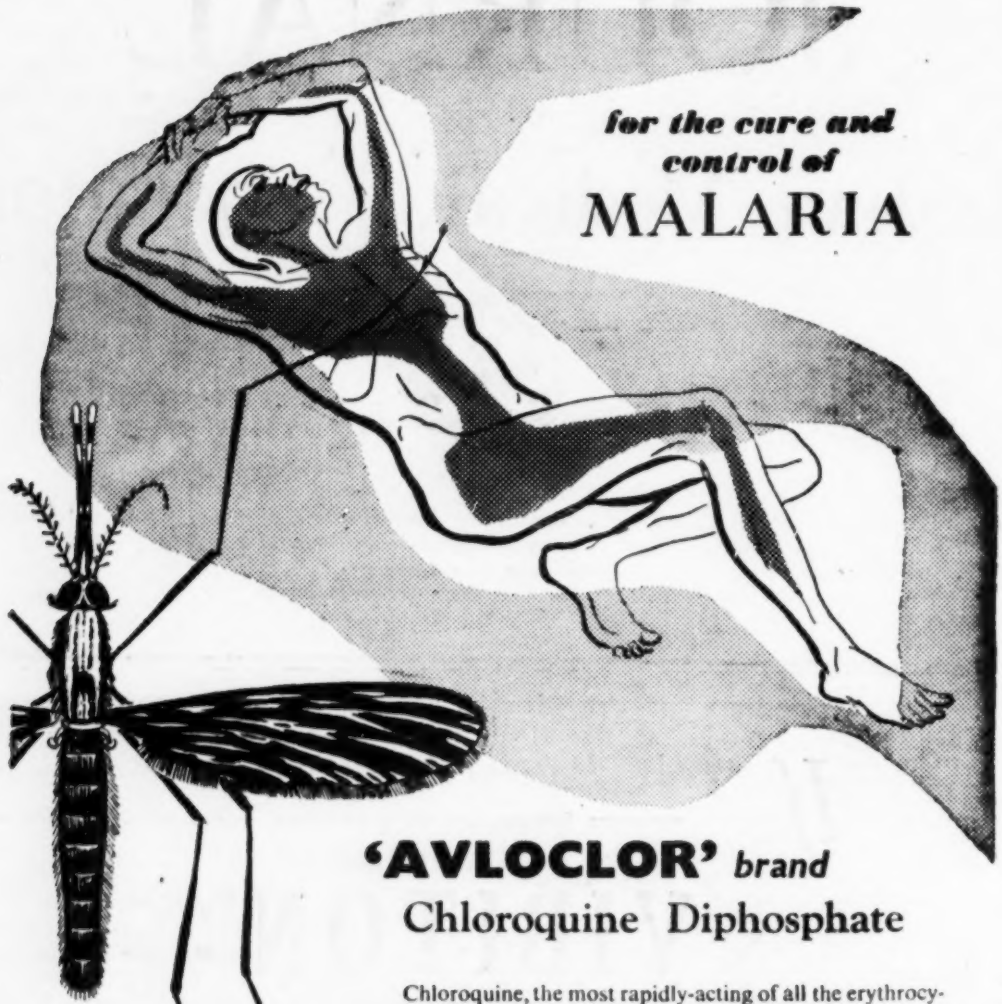

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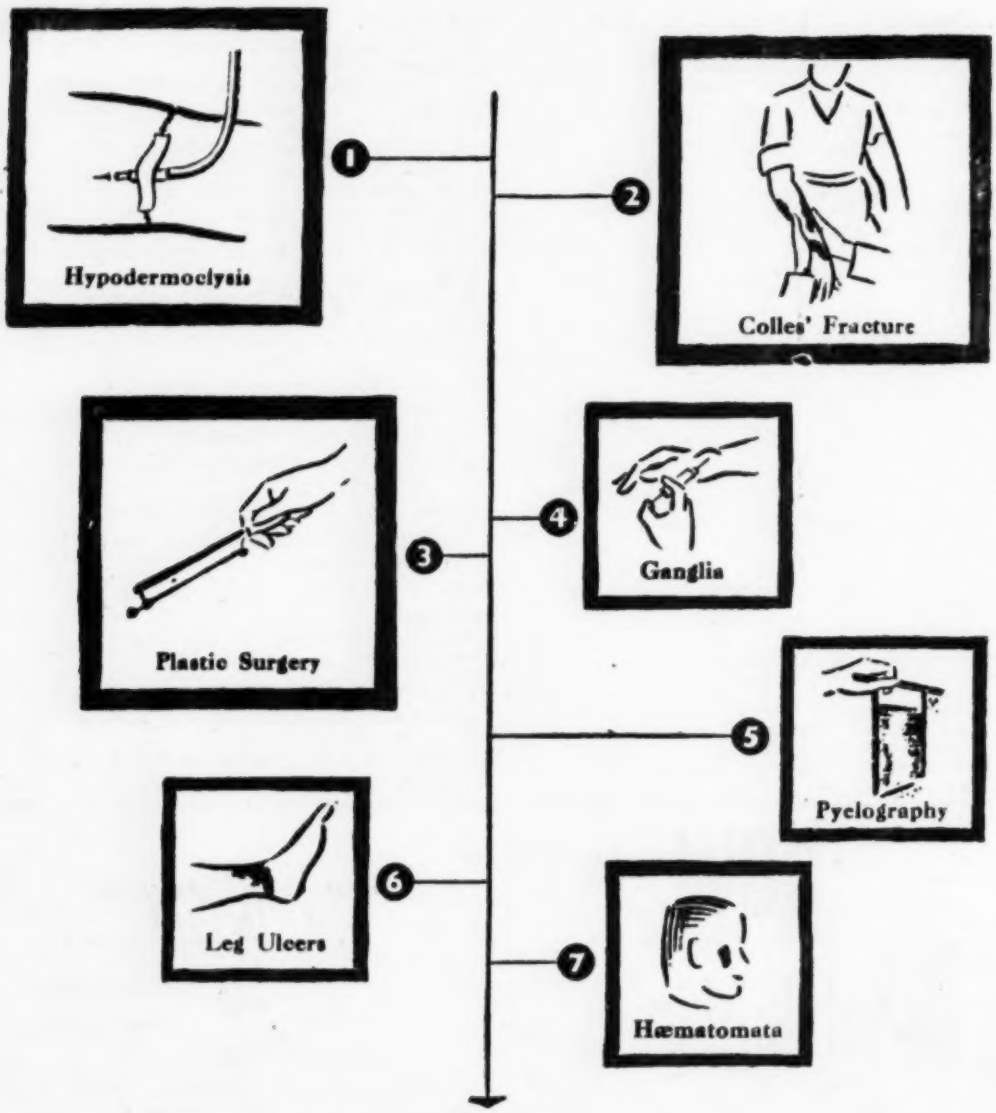

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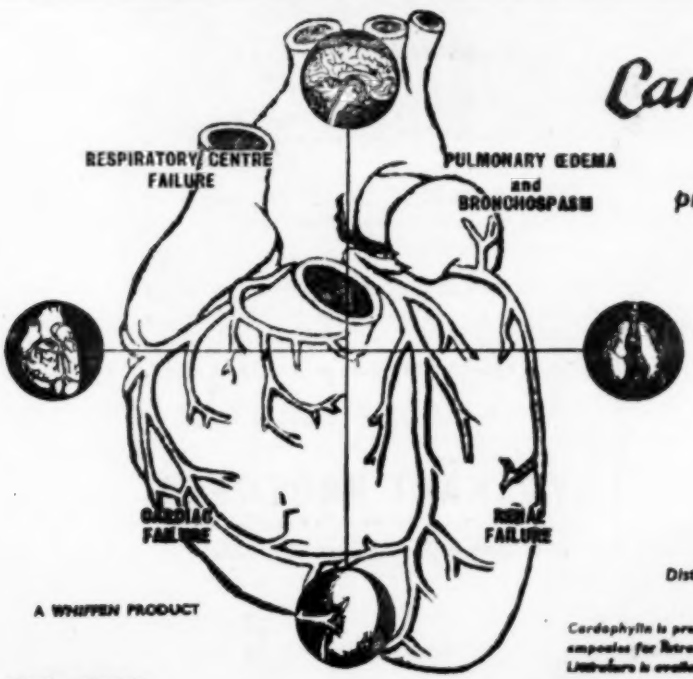

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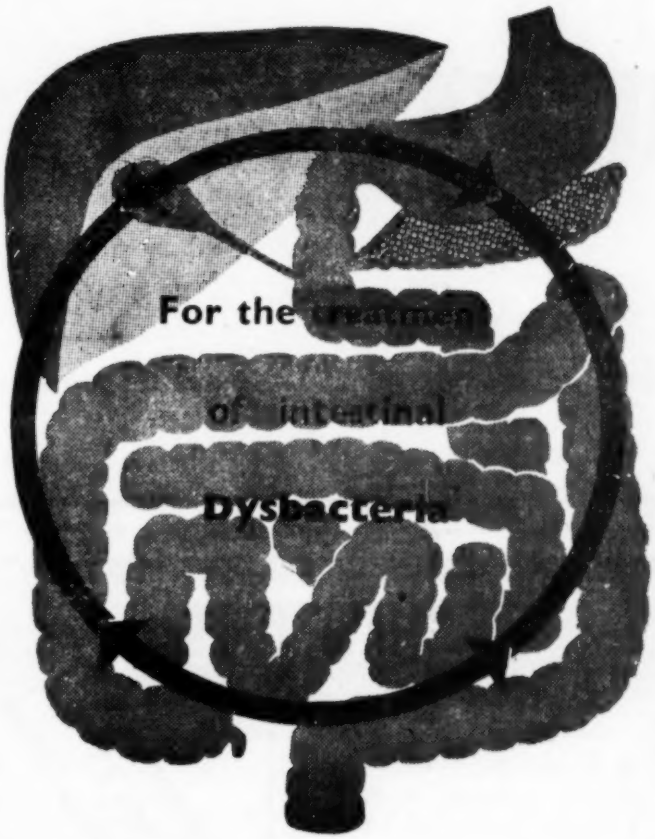

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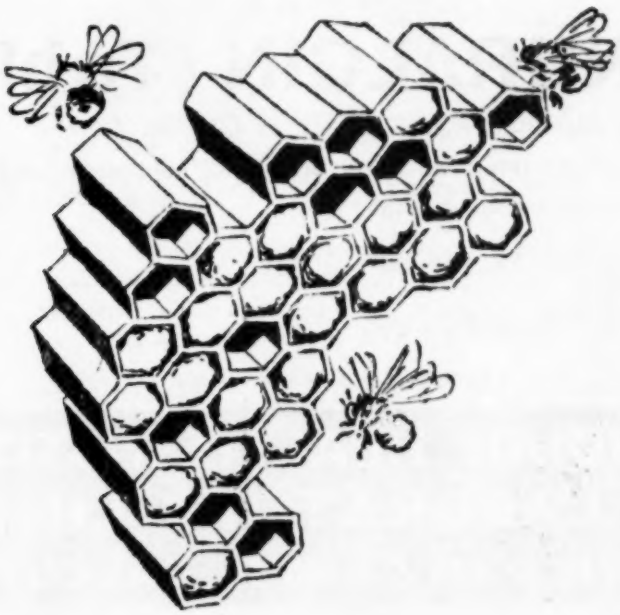

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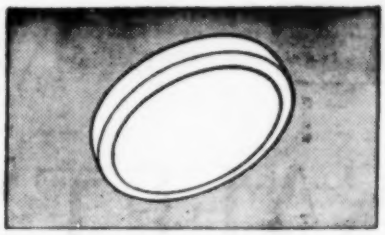

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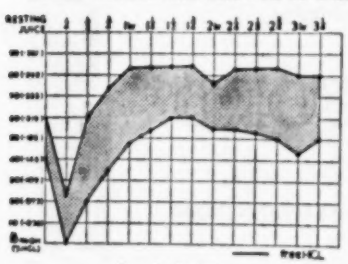
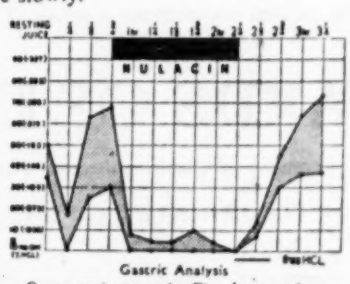


Gastric Analysis

Superimposed gruel fractional test meal curves of five cases of duodenal ulcer.



Gastric Analysis

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REFERENCES

British Medical Journal, 180-182, 26th July, 1952

Medical Press, 195-199, 27th Feb., 1952

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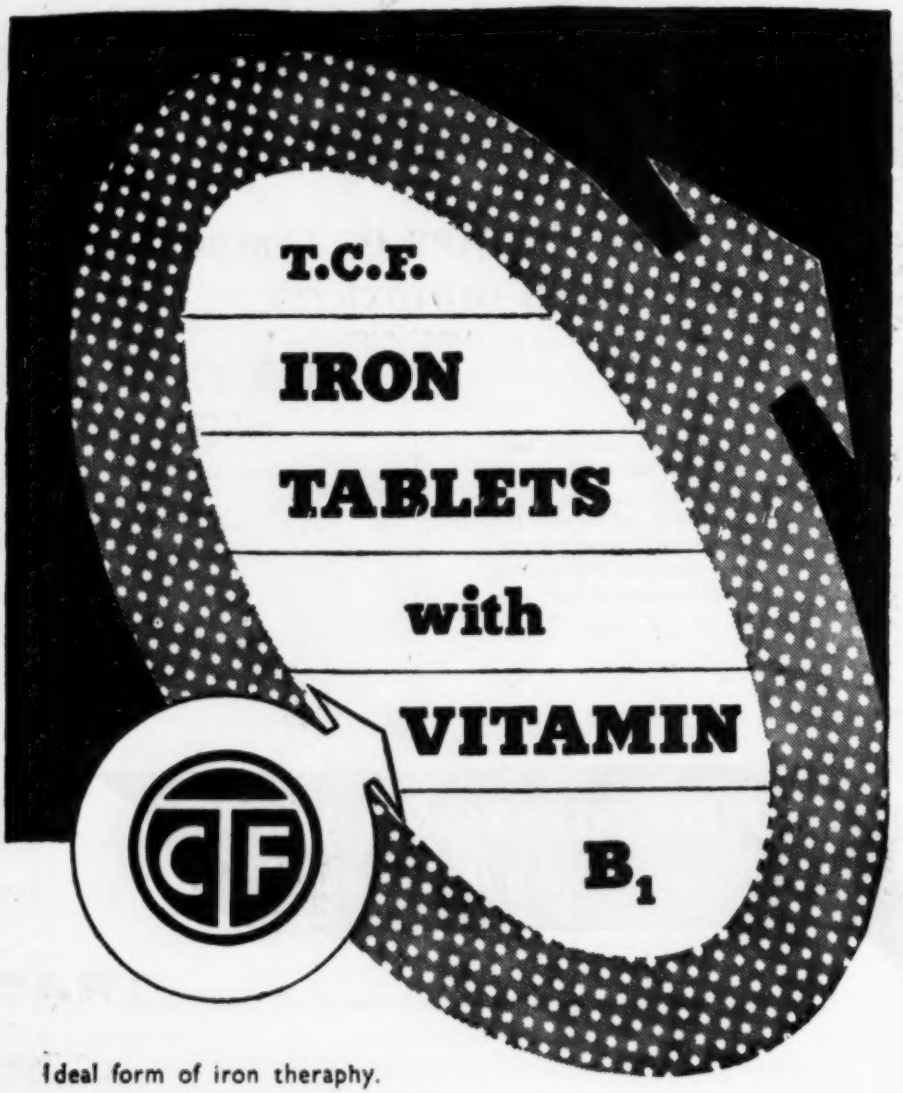

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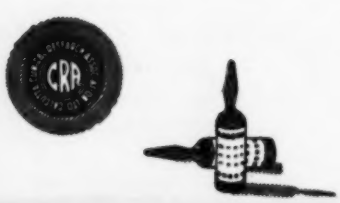

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Reference : *Lancet*, 261 : 1002 (Dec.) 1951.

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Journal of the Indian Medical Association

VOL. XXIII, No. 9 CALCUTTA JUNE, 1954

ORIGINAL ARTICLES

CHRONIC GRANULOMAS OF THE ILEOCAECAL REGION: A HISTOLOGICAL AND BACTERIOLOGICAL STUDY

H. N. SETH, M.B., B.S.,
R. M. L. MEHROTRA, M.D., PH.D.
AND
V. S. MANGALIK, M.D.
(From the Department of Pathology and Bacteriology, King George's Medical College, Lucknow University, Lucknow)

Sometime back, one of us (Mangalik, 1950) published a brief report in which the non-specific nature of the chronic granulomatous ileocaecal lesions was discussed and attention was focussed to the conflicting views expressed in literature on the nature of these lesions. The difficulties in distinction between 'primary intestinal tuberculosis' and 'regional ileitis' were outlined and a plea was made for starting elaborate investigations to elucidate this problem. Since then we have extended the sphere of our investigations by including detailed histopathological and bacteriological examination of the affected portions of the bowel. The results of these studies are described in this paper.

METHODS AND MATERIAL

CLINICAL MATERIAL:

In all 48 specimens of loops of small and large bowel removed at operation from cases clinically diagnosed as ileocaecal tuberculosis or regional ileitis have been studied. All these cases were admitted to the hospital with more or less similar complaints, viz., pain in the umbilicus or/and in the right iliac fossa, anorexia, progressive loss in weight, occasional attacks of vomiting and diarrhoea alternating with constipation. Patients also gave history of irregular attacks of low grade pyrexia and a lump in the right iliac fossa. Irregular menstruation and in some amenorrhoea was a noticeable complaint among females. Their age varied from 16 years to 48 years and duration of symptoms from 3 months to 10 years.

Clinically all the patients had a lump in the right iliac fossa which was freely movable from side to side. In some, the lump was fixed to structures in the posterior abdominal wall. The lump was tender on deep palpation to a variable degree in different patients and a gurgling sound could be elicited on palpation in most. Percussion revealed a dull note over the lump. Examination of the heart and lungs revealed no abnormality; x-ray of the chest was taken in all cases but did not show any evidence of pulmonary tuberculosis.

LABORATORY INVESTIGATIONS:

Among the laboratory investigations particular attention was paid to the examination of stool for amoebiasis. The results were negative in all cases.

Histological Methods—Several small pieces of tissue were removed from suspected areas in the bowel wall and from the mesenteric lymph glands and fixed in 10 per cent formol-saline. Sections were cut after paraffin embedding and stained with Harris haemotoxylin and eosin, Weigert's iron haematoxylin and van Gieson, Wilder's silver impregnation method for reticulin and acid-fast stain for tubercle bacilli. Representative sections were stained by Hotchkiss periodic acid technique for mucopolysaccharides.

Bacteriological Methods—Bacteriological examination for the isolation of tubercle bacilli from the lesions was carried out in 23 instances. In the rest of the cases, cultural and animal inoculation tests were not possible as the specimen had been fixed prior to its submission to us in formalin. Pieces of tissue about 1 cm. square from the bowel wall were removed and a homogenate made in 6 c.c. of sterile isotonic saline; 5 c.c. of this solution was injected intramuscularly in the thigh of an adult healthy guineapig, weighing 250-400 g. and the remaining amount was used for inoculation in Lowenstein-Jensen and Dorset's egg medias. The animals were watched every week for the

development of lesions at the site of injection and for evidence of loss in weight. They were sacrificed after 2 months and a gross as also a histological study of tissues at the site of injection, regional and abdominal lymph nodes and liver and spleen was carried out for evidence of lesions.

The culture medias were examined for the growth of the organisms every week. They were discarded when no growth of tubercle bacillus was found after 2 months of inoculation.

Results

We have analysed the results of our investigations on all the 48 cases studied so far. These findings are described.

Histological examination of bowel lesions of these 48 cases, revealed malignant disease of the caecum and colon in 8 cases (adenocarcinoma 5 cases, and lymphosarcoma 3 cases). These findings are not included in the present communication as we intend to confine observations on chronic granulomatous ileocaecal lesions alone.

A. Gross Appearance of Lesions in the Bowel:

The lesions were commonly found in the terminal ileum, caecum and the ascending colon and less frequently in the sigmoid colon and appendix. The distribution of lesions in the various parts of the bowel in our cases is given in Table 1.

Table 1—Showing Distribution of Gross Lesion in the Bowel in 40 Cases

Portion of the bowel affected	*No. of cases*
Ileum alone	8
Ileum and caecum	8
Ileum, caecum and colon	20
Caecum and colon	1
Colon alone (sigmoid portion)	1
Caecum alone	2
Appendix alone	—
Appendix along with ileum or caecum ...	2

Ileum—The ileum was involved in 36 cases, and showed two types of lesions:

Diffuse Type (31 Cases)—In this about 5 to 20 cm. of the terminal ileum was grossly narrowed and thickened (Fig. 1). The bowel proximal to the stenosed portion was considerably dilated. Externally the stenosed portion of the ileum appeared thickened and boggy; the normal shining appearance of the serosa was completely lost and the blood vessels appeared congested. The inner surface of the bowel showed loss of mucosal rugosities. Frequently the mucosa was denuded at several places leading to the formation of irregular superficial ulcers. The ulcers showed considerable variation in size, some were small (0·5 × 0·5 cm.), others were large (3 × 2 cm.) and had well defined thick margins and slightly indurated bases. The cut surface of the bowel wall appeared oedematous and its thickness varied from 5 to 20 mm. The ileocaecal opening was markedly narrowed and numerous small polypoid processes were seen arising from the mucosa of the bowel in this region. These polypoid processes extended for about 3 to 5 cm. in the terminal ileum and the caecum.

Localised or "Skip" Type (5 cases)—The ileum showed constriction bands varying from 3 to 12 in number and 0·5 to 2 cm. in thickness, separated by normal looking bowel (Fig. 2). The bowel in the region of these constrictions was thickened, oedematous and congested; the lumen was markedly narrowed (1·5 cm. in diameter), the mucosa was oedematous and presented a puckered appearance. The bowel in between the bands was considerably dilated and thinned out. Its circumference measuring from 6 to 16 cm.

Caecum—The caecum was involved in 31 cases, either alone or along with lesions in the ileum or proximal part of colon. It appeared small, its walls were thickened (10-15 mm.) and lumen was considerably narrowed. The mucosa showed a number of polypoid projections extending from the ileocaecal valve. Small irregular ulcers were seen in 15 cases.

Fig. 1—Portion of Terminal Ileum and Caecum Showing Marked Thickening and Loss of Mucosal Rugosities

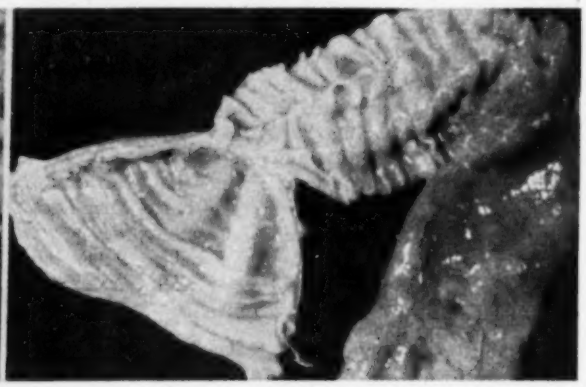

Fig. 2—Part of Terminal Ileum and Caecum Showing Localised or "Skip Type" of Lesion

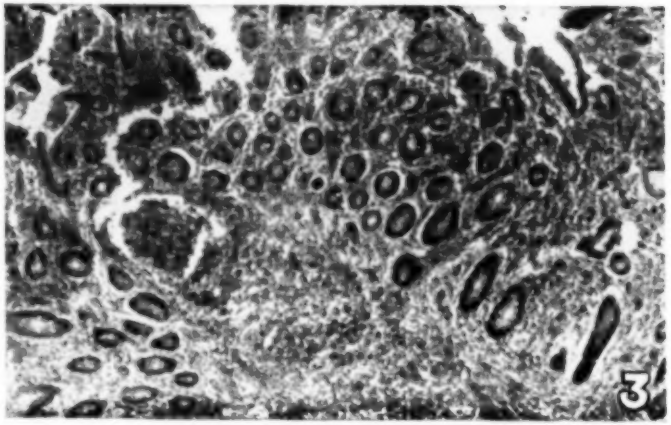

Fig. 3—Section from the ileum showing intense collection of inflammatory cells in the mucous and submucous layers. H. & E. × 100.

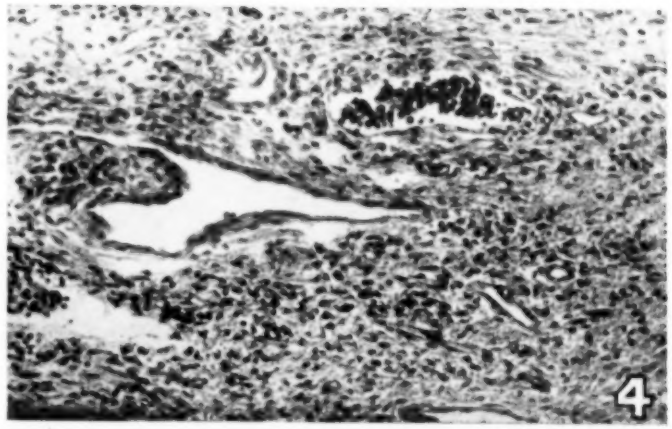

Fig. 4—Section from the ileum showing markedly dilated lymphatics and oedema of the serous layer. H. & E. × 180.

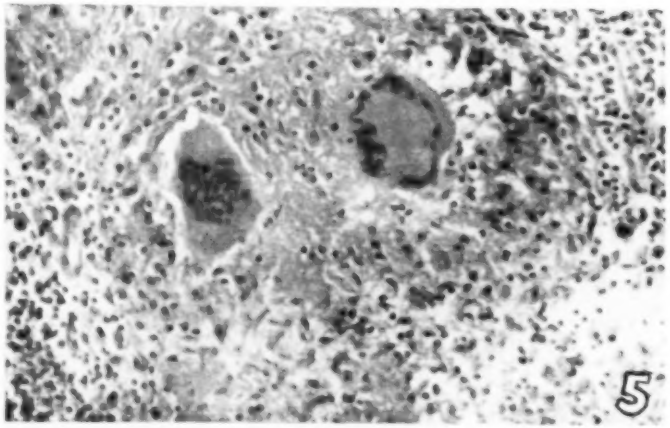

Fig. 5—Shows focal collection of epithelioid cells with two giant cells in the submucous layer of the bowel wall. H. & E. × 240.

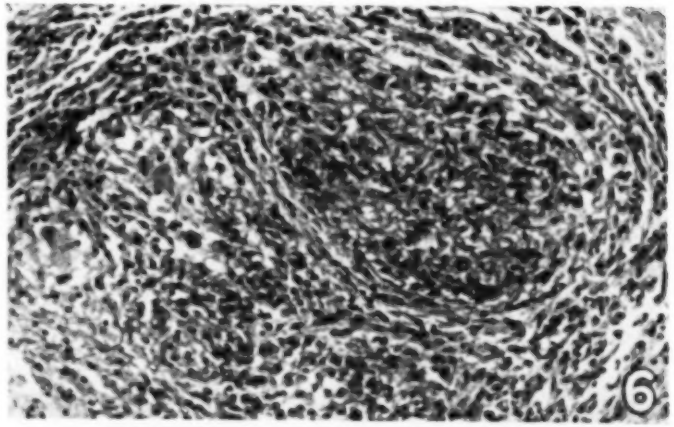

Fig. 6.—Shows fibroblastic proliferation around one of the epithelioid cell collections in the bowel wall. H. & E. × 200.

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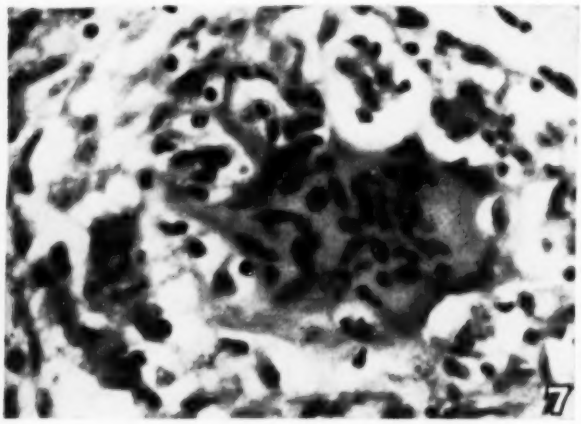

Fig. 7—A giant cell in the epithelioid cell collections showing scalloping of borders. H & E. × 810.

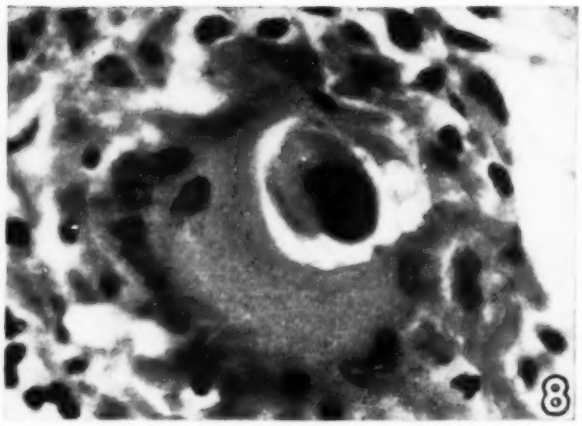

Fig. 8—Giant cell with inclusion, consisting of a concentrically laminated body with affinity for haematoxylin stain. Schumann body. H. & E. × 900.

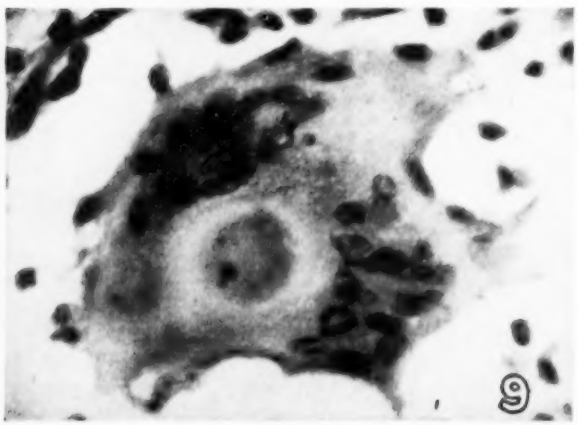

Fig. 9—Giant cell enclosing a spherical inclusion demonstrable after van Gieson's stain. V. G. × 900.

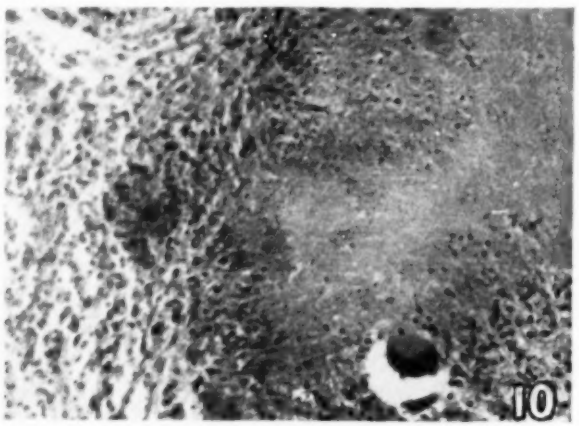

Fig. 10—Section from the ileum showing extensive caseous necrosis in the epithelioid cell collections. H. & E. × 150.

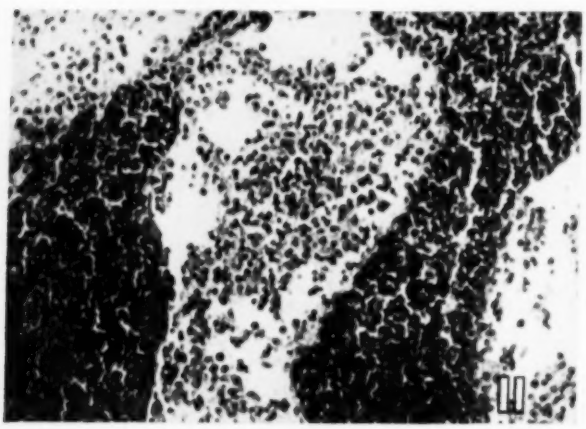

Fig. 11—Section from the mesenteric lymph nodes showing markedly dilated lymph sinuses filled with mononuclear cells. H. & E. × 180.

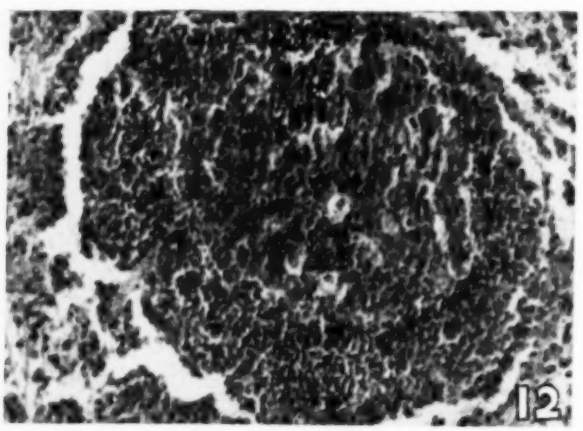

Fig. 12—Section from the mesenteric lymph nodes showing hypertrophied lymph follicles with evidence of germinal hyperplasia. H. & E. × 180.

In 8 cases the lumen of the caecum was almost obliterated by the thickened mucosa.

Appendix—The appendix was thin, tubular and normal looking in all the cases except in two where it was grossly thickened and distorted. The lumen of the appendix in these cases was markedly narrowed and the wall of the organ was thickened. Sigmoid colon was involved only in one case where the lesions were confined to this part of the gut while the ileum, caecum, ascending colon and appendix were normal. Externally the sigmoid colon presented tubular constriction extending for about 9 cm. The wall of the bowel in this region was thickened (1·5 cm.) and firm, mucosal surface showed destruction of rugosities and two superficial ulcers 2 × 3 cm. in size.

Lymph glands—The lymph glands of the mesentery were examined in 34 cases and were found to be moderately enlarged. They appeared discrete and firm and their cut surfaces presented a uniformly greyish white fleshy appearance. In two cases the cut surface of the glands revealed tiny yellowish white caseous areas.

B. Microscopic Appearances of Lesions:

Lesions in the Bowel: The lesions in the ileum, caecum, appendix and colon were more pronounced in the submucous and mucous layers and to a lesser extent in the serous and muscular coats. These changes comprised of the following:

(i) Inflammatory Cellular Exudate—The exudate, in all the 40 specimens studied, showed more or less a similar picture, it consisted of lymphocytes, plasma cells, mononuclears and neutrophils in varying proportions. In 4 cases, the predominating cells of the exudate were eosinophils. The collection of inflammatory cells was most intense in the submucous coat and also in the interglandular stroma of the mucosa (Fig. 3, *vide* Plate). The cells were sparsely distributed in the muscular and the serous layers of the bowel wall. The epithelial lining of the mucosa was denuded at a few places in all the cases and the inflammatory reaction in the bowel wall was most pronounced at the bases of the ulcers. In six cases the lymphoid follicles of the mucosa were markedly enlarged and showed active germinal centres, which were occupied by proliferated reticulum cells and surrounded by a thin zone of lymphocytes. Towards the periphery of the follicles, dilated lymphatics were in evidence. In the remaining cases the lymphoid follicles appeared small or were replaced by focal granulomas.

(ii) Lymphoedema—A variable degree of oedema together with dilatation of lymphatics was found in the submucous and the serous layers of most of the cases (Fig. 4, *vide* Plate). These changes were pronounced in six cases but were minimal in lesions characterised by fibrosis and cicatrization.

(iii) Focal Granulomas—Besides the chronic inflammatory cells, the other most striking feature of the lesions was the presence of local collections of epithelioid cells with variable number of giant cells (Fig. 5, *vide Plate*). The distribution of these collections was variable. They were common in the mucous, submucous and serous layers but were infrequent in the muscular coats. In the mucosa the epithelioid collections mostly occupied the site of lymphoid follicles. In some cases the epithelioid cell collections occupied the centre of hypertrophied lymphoid follicles, in others they had completely replaced these follicles. Towards the periphery of some of these cell collections fibroblastic proliferation and laying down of collagen was in evidence (Fig. 6, *vide* Plate). Scattered irregularly in the epithelioid cell collections were a number of giant cells. The giant cells showed great irregularity in size, shape and in the number and arrangement of nuclei. Some of the cells were ovoid, others rounded or elongated in appearance. The cell borders were usually well defined but in others they showed scalloping or were irregular (Fig. 7, *vide* Plate). The size of the cells varied from 80 to 150μ and the number of nuclei from 4 to 90. The nuclei were rounded or ovoid, but their arrangement was very indefinite. In some the nuclei were crowded together in the centre, in others at one or both ends of the cell and in still others the nuclei were arranged in a horse-shoe fashion at the periphery of the cell. The cytoplasm of the giant cells stained dull red with eosin and often enclosed vacuoles, engulfed lymphocytes and in two cases cytoplasmic inclusion material. In one, the inclusion consisted of concentrically laminated body with an affinity for haemotoxylin stain (Schumann body) (Fig. 8, *vide* Plate), while in the other it was demonstrable after van Gieson's stain as a light brown spherical structure which gave negative P.A.S. and calcium staining (Fig. 9, *vide* Plate). A close study of the areas showing focal granulomas in the bowel wall showed no evidence of necrosis or caseation in 29 cases. In 5 cases a small area in the centre of the cell collections showed disintegrated nuclear chromatin and loss of cellular details (necrosis); in six, centre of these cell collections was formed by large structureless pink staining homogenous mass (caseation) (Fig. 10, *vide* Plate). Special study of the behaviour of reticulin framework in and round those granulomatous lesions revealed that in the 29 cases, not showing necrosis or caseation, there was laying down of reticulin fibres in a circular fashion at the periphery. In five cases showing necrosis, the reticulin framework was well preserved, and in six cases with caseation, it was completely or partially destroyed in two, and appeared to be considerably increased and thickened in four.

(iv) Blood Vessels—In several of these cases a number of small and medium size blood vessels distributed in the submucous and serous layers revealed endarteritic changes. The intima of these vessels was thickened and there was proliferation of elastic tissue of

the media in some vessels. The lumen was greatly narrowed in others. Fibrinoid necrosis was not encountered.

Lesions in the Appendix—The histopathological study of the appendix in these cases showed interesting feature. Though the gross lesions were visible in two cases only, the microscopic lesions were found in ten. All these ten appendices showed chronic inflammatory cellular exudate in their mucosal and submucosal layers. In three, focal collections of epithelioid cells and giant cells were also found. In one, the epithelioid collections were confined to the serosa alone, while in two they were diffusely distributed in all the layers. In one of our cases presenting gross features of ileocolitis, the focal collections of epithelioid cells were found only in the appendix whereas the ileum and the caecum showed diffuse cellular infiltration with lymphocytes, plasma cells and mononuclears.

The histological appearances enumerated above have been summarised in Table 2:

TABLE 2

Microscopic appearances	*No. of Cases*
1. Inflammatory cellular exudate	
Variable	40
2. Lymphoedema	
Marked	*6
Slight	26
Absent	8
3. Focal granulomas with giant cells ...	40
Focal granulomas without necrosis or caseation	26
Focal granulomas with necrosis, but no caseation	5
Focal granulomas with caseation	9

C. LESION IN THE MESENTERIC NODES:

The mesenteric lymph nodes were studied in 36 cases only, in the remaining 4, the glands were not available for study. The normal follicular pattern of the node was discernible in 6 cases, one of which showed marked sinus catarrh (Fig. 11, *vide* Plate) while in the other five the lymphoid follicles were hypertrophied with active germinal centres (Fig. 12, *vide* Plate). The rest of the 30 lymph nodes were studded with irregularly scattered focal collections of epithelioid cells intermingled with lymphocytes and plasma cells with a varying number of giant cells. The characteristics of these giant cells were same as enumerated in the similar lesions in the bowel wall. In 17 instances the focal granulomas were not associated with caseation or necrosis; in four there was necrosis but no caseation and in nine, the lymphoid parenchyma was more or less completely replaced by a pink staining homogenous area (caseation) with irregular deposition of bluish black material in 2 cases (calcification). The reticulin framework inside the caseous areas showed disintegration and destruction.

Table 3 shows the histological findings in 36 lymph nodes.

Histological findings	*No. of Cases*
1. Sinus catarrh	1
2. Hypertrophied lymphoid follicles and reactive hyperplasia	5
3. Focal granulomas	30
Without caseation or necrosis	17
With necrosis but no caseation	4
With caseation	9

D. BACTERIOLOGICAL FINDINGS:

Sections from the bowel wall and the mesenteric lymph nodes failed to show acid-fast bacilli in any of the 40 cases so examined after careful search. Culture and animal inoculation from the material of 23 cases where the specimen was received without fixation in formalin were also consistently negative for tubercle bacilli. The possibility of technical defects in culture and animal inoculation was thought of. Hence as a control similar procedure viz., culture and guineapig inoculation of a homogenate from the wall of intestinal ulcers in three cases of secondary intestinal tuberculosis obtained from the autopsy room were carried out. In all these cases tubercle bacilli could be grown on culture media and characteristic lesions in the guineapigs were produced. The significance of these results will be discussed.

DISCUSSION

Chronic granulomatous lesions of the ileocaecal region have been widely studied during recent years. Previously such lesions used to be labelled as 'primary hyperplastic ileocaecal tuberculosis'. Moschowitz and Wilensky (1923) were perhaps the first to express doubt on the tubercular nature of these lesions. Crohn, Ginzburg and Oppenheimer (1932) on the basis of histological study of bowel lesions concluded that a large number of these cases were not tubercular. They classified these cases in a separate disease entity called 'regional ileitis'. In 1934 Colp demonstrated that the disease was more of an enterocolitis than mere ileitis, but due to long usage the original term 'regional ileitis' is still in vogue. Crohn and Yarnis (1940) in a subsequent study based on 4800 autopsies reported that primary intestinal tuberculosis was very uncommon. On the basis of histological examination of lesions in the bowel showing tubercles with characteristic caseous necrosis, they found only eight cases of primary intestinal tuberculosis. The animal inoculation tests were done in only 2 cases out of these eight and the results were negative in both. Similar views were expressed by Ukil (1942) who analysed 1,000 autopsies and found that 5·1 per cent cases showed tubercular infection of the intestine without any evidence of pulmonary tuberculosis. In a review of 4,000 autopsies, Tribedi (1941) encountered only 10 cases of primary intestinal tuberculosis. Hadfield (1939) and Koenig (1945) con-

sidered that the histological appearances of regional ileitis resembled sarcoidosis more closely than tuberculosis. Hadfield (1939) found that the disease was characterised by marked hyperplasia of lymphoreticular tissue and lymphoedema in the wall of the bowel, that the tubercles did not show caseation, tubercle bacilli were absent in the lesions and the animal inoculation test was negative for tubercle bacilli. Warren and Sommers (1948) after a study of specimens removed by surgeons considered that cicatrizing enteritis is an acceptable pathologic entity. Hoon *et al* (1950) classified chronic lesions of the ileocaecal region into 3 types, viz., (1) ileocaecal tuberculosis where the lesions were characterised by presence of tubercles and caseous necrosis; (2) noncaseous tubercular enterocolitis (isolated intestinal sarcoidosis) where the lesions in the bowel were characterised by tubercle formation but without any evidence of caseation and (3) regional enterocolitis (regional ileitis) where the lesions mostly presented a chronic inflammatory reaction with a few ill-defined tubercles.

Taylor (1945) stressed that it was not possible to distinguish between regional ileitis and hypertrophic ileocaecal tuberculosis on the basis of clinical features and morbid anatomy alone. He was of opinion that Crohn's disease has had too enthusiastic and uncritical a reception and that hypertrophic ileocaecal tuberculosis has been too lightly discarded as a clinical and pathologic entity. He maintained that tuberculosis accounted for a much higher percentage of cases of regional ileitis than was at present recognised and that chronic tuberculous lymphangitis of the mesentery might be the basis of many cases of regional ileitis where the lesions in the affected gut wall were apparently non-tuberculous. Pumphrey (1938) investigated cases diagnosed as regional ileitis and found after careful histological and guineapig inoculation tests that 20 per cent of these cases were tubercular.

The present investigations show that in a group of 40 cases it was not possible to distinguish between these two types, on the basis of clinical picture and gross appearance of bowel lesions. Similar views have been expressed by Taylor (1945), Cattell and Mosely (1945), Hoon *et al* (1950). It is clear, therefore, that distinction, if any, between regional ileitis and hyperplastic intestinal tuberculosis can be assessed by a careful histological examination of the lesions in the intestinal wall and lymph nodes and also by bacteriological studies. Among the histological criteria it is stated that the focal granulomas in tubercular ileitis have a disorderly appearance, the epithelioid cells are mixed with lymphocytes and the giant cells are scalloped and irregular in size and shape, caseous necrosis is lacking and acid-fast bacilli are absent (Crohn, 1949; Warren and Sommers, 1948). The present study shows that the inflammatory cellular exudate, although more intense in the submucous coat and interglandular stroma was uniformly seen in all cases and could not be of any help in the differential diagnosis of these lesions. Hadfield (1939) was impressed by the constant finding of lymphoedema and dilated lymphatics in the lesions of regional ileitis and advocated that the primary lesion resided in the lymphoreticular tissue of the bowel. He considered that the lymphatic obstruction was the initiating factor in the development of the disease. Reichert and Mathes (1936) provided further support to this view. They produced lesions in the ileum of dogs after injection of sclerosing solutions in the mesenteric lymphatics. The view has, however, been criticised by Sinaiko and Necheles (1946) who repeated the experiments on similar lines but failed to confirm the view of Reichert and Mathes. They showed that the lesions thus produced in the colon of dogs showed a tendency to spontaneous regression and were devoid of chronicity so characteristic of natural disease. In our series marked lymphoedema with dilated lymphatics and hypertrophied lymph follicles in the submucous layer of the bowel was encountered in six cases only. In the rest it was very variable and at times too minimal to be of any practical help. The intimate histology of the focal granulomas and the appearances of the giant cells were found to be too variable to form a basis for differentiation. The only feature in these granulomas which appeared to be of significance was the presence or absence of caseous necrosis and on the basis of this finding our material can be classified into 2 groups:

Group A—Cases where epithelioid cell collections and giant cells in the bowel wall and in the mesenteric lymph nodes were devoid of frank caseation (31 cases).

Group B—Cases where the epithelioid cell collections in the bowel wall or/and in the lymph node showed typical caseous necrosis (9 cases). In this group six cases revealed caseous necrosis both in the focal granulomas in the bowel and in the lymph nodes. In 3 cases the caseous necrosis was found only in the lymph node, the bowel lesions being free from it.

The study thus shows that judged from the histological appearances alone chronic granulomatous lesions of the bowel wall can be classified into the above groups on the basis of caseation. In this series of 40 cases, 31 or nearly 75 per cent did not show any caseous necrosis and could be thus looked upon to represent regional ileitis of Crohn or cicatrizing enteritis of Shields Warren and Sommers. The remaining 9 cases (25 per cent) represent that group which is considered to be primary intestinal tuberculosis of the hypertrophic type. There appears to be little justification in the dogmatic statement of some of the writers that "cicatrizing enteritis absorbs almost all the cases once called hyperplastic tuberculosis of the intestine" (Warren and Sommers, 1948) or in the fact that "Chronic tuberculous lymphangitis of the mesentery may be the basis of many cases of regional ileitis where the lesion in the affected gut wall is apparently nontuberculous" (Taylor, 1945). The truth seems to be between these

two extremes, and the study reveals relative incidence of the two types of chronic granulomatous lesions of the bowel.

Bacteriological investigations which were undertaken with high hopes of revealing the basic nature of these controversial lesions have proved to be disappointing. Paraffin sections stained for acid-fast bacilli were examined in all the 40 specimens both from the bowel wall and lymph nodes. Careful search failed to reveal acid-fast bacilli in any of the sections, either with or without caseous necrosis. Animal inoculation and cultural examination of the tissue homogenate taken from 24 cases (Group A—21 cases, Group B—3 cases) also proved to be completely negative for acid-fast bacilli.

It is generally accepted that demonstration of tubercle bacilli in stained sections is not easy and animal inoculation tests though more accurate are also liable to be fallacious (Taylor, 1945; Anguli and Menon, 1950; Bockus 1946). Bockus (1946) considered that if for the diagnosis of hypertrophic type of intestinal tuberculosis, inspite of a typical histological picture, a bacteriological confirmation is required, diagnosis shall be extremely difficult in a number of instances. It is probable that tubercle bacilli in the tissues are so scanty or so altered that they fail to grow on culture media or cause disease in susceptible animals. The presence of a substance in the aqueous extracts of tubercular lymph nodes, which inhibits the growth of tubercle bacilli on culture media has recently been demonstrated. (*Lancet*, 1952).

In our series, characteristic caseous necrosis was evident in 9 cases but animal inoculation and cultural tests for the demonstration of tubercle bacilli could be carried out in 3 cases only. The results in all these three cases were negative and the diagnosis of tuberculosis was made solely on the basis of histological appearances. In view of the fact that bacteriological investigations were possible only in 3 cases, we are not in a position to comment on its merits but we feel all the same that a characteristic histological picture in which caseation is present is sufficient for the diagnosis of tuberculosis. A greater number of cases with caseation have to be subjected to bacteriological investigations before any opinion can be given. In this connection it is of interest to note that in a bacteriological investigation undertaken on a series of 75 cervical and axillary lymph nodes presenting characteristic histological picture of tubercular lymphadenitis with extensive caseous necrosis the results were positive only in 8 cases by the examination of stained sections or by animal inoculation or culture experiments (Seth, Mangalik and Mehrotra, 1953).

Conclusions

(1) In a study of 48 unselected consecutive specimens of the bowel removed at operation with the clinical diagnosis of 'intestinal tuberculosis' the incidence of pathological lesions was as follows:—

(i) Regional ileitis 31 (64 per cent); (ii) primary hypertrophic intestinal tuberculosis 9 (18 per cent) and (iii) malignant neoplasm of the ileocaecal region 8 (17 per cent).

(2) That a distinction between these lesions is not possible on the basis of clinical manifestation or gross appearances of the bowel.

(3) That a careful histological study of the bowel wall and the mesenteric lymph nodes can help to distinguish between the two granulomatous lesions of that area viz., regional ileitis and primary intestinal tuberculosis of hypertrophic type—the main basis being the absence or presence of caseous necrosis in the focal granulomas.

(4) That bacteriological investigations necessary for this investigation are time consuming and are not likely to be of help in the elucidation of the problem. The full difficulties of bacteriological studies are outlined.

Acknowledgment

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THE OCCURRENCE OE SCRUB TYPHUS IN KARNAL DISTRICT

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Scrub typhus is also known as rural typhus, jungle typhus, tsutsugamushi disease, Japanese river fever, mite typhus and OXK typhus. The disease as is evident from the nomenclature is more prevalent in rural areas. Soman and Menon (1948) reported cases of scrub typhus in patients living on the outskirts of the city of Bombay where, however, the conditions approached rural conditions, but Chaudhuri and Chakravarti (1949) reported many cases in the city of Calcutta.

The disease is supposed to be caused by the bite of the six legged larva of certain trombiculoid mites such as *T. akamushi, T. tsutsugamushi, T. deliensis* and others. These larvae crawl on the grass and bite field workers who happen to walk in such grass. During the second great world war the disease was very wide spread among troops exposed to jungle conditions in Burma, Malaya, Philippines and India. The reservoir of infection are the field rodents and causative micro-organism is *Rickettsia orientalis.*

In 1951 one of us (T.N.M.) came across two cases of scrub typhus in Karnal district in the months of September and October. An epidemiological investigation in the village from which one of the two cases came showed the possibility of more cases having occurred in that village. Those cases have been reported elsewhere (Mathur and Suri 1953) and incidentally they are the first cases of scrub typhus to be reported from the plains of Punjab. Previously, Covell (1936) had reported cases from Kasauli and Subathu in Simla hills. Four more cases that we encountered afterwards in the same district, are described below:

Case Reports

Case 1—P., a 35 years old male was admitted on 28-7-53 into the K. E. Hospital, Karnal, with a history of 3 weeks' continuous fever. He also complained of cough and constipation. The spleen and liver were enlarged 3 fingers below the costal margin, the tongue was coated and dry, the abdomen was not tympanitic. The total leucocytic count was 5,600 c.mm. and the differential count was polymorphs 67 per cent, lymphocytes 32 per cent, monocytes 1 per cent. Widal test was negative and agglutination test for brucellosis was also negative. The Weil-Felix test showed positive agglutination in 1:125 against OXK on 29-7-53 and in 1:250 on 3-8-53. OX2 and OX14 were negative on both the occasions. The negative Widal test and the rising titre against OXK made us to think of scrub typhus as a possible diagnosis in this case. There was no rash, no eschar and no adenopathy. The temperature came down gradually in another week's time without any specific treatment.

Case 2—S. S., a 20 years old student who had gone out for a practical training in tractor driving, lived in the Nagla farm 5 miles from Karnal. He had body pains, cough and constipation and was admitted to the K. E. hospital, Karnal as a case of P.U.O. (pyrexia of unknown origin) on the 9th day of his illness. The liver and spleen were not palpable. The neck was moderately rigid. There was no rash and no eschar and no lymphadenopathy.. On admission total leucocytic count was 5,100 c.mm. with polymorphs 75 per cent, lymphocytes 23 per cent, and monocytes 2 per cent. Widal test was negative and the Weil-Felix test showed agglutinins up to a titre of 1/50 only against OXK. Since one of us

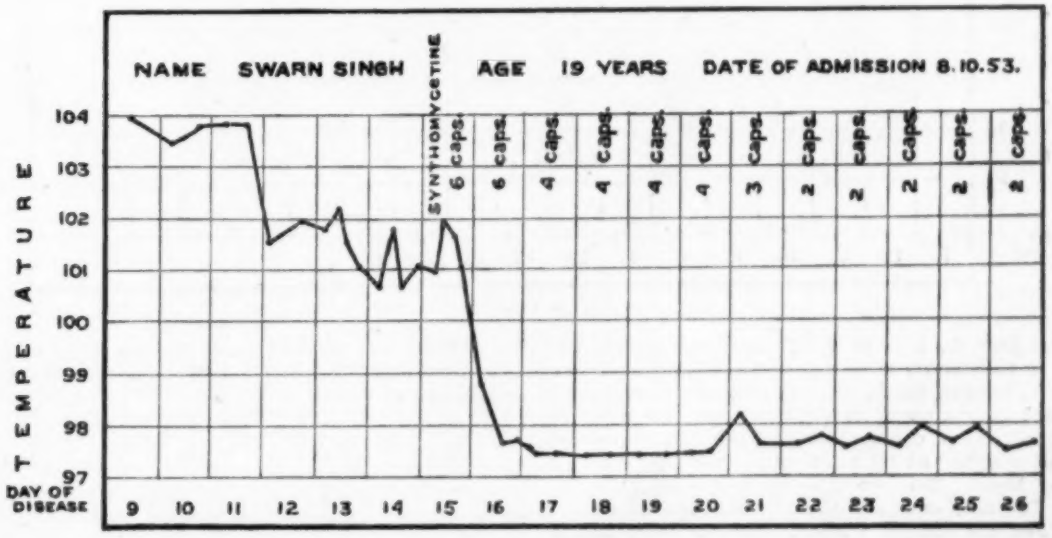

Fig. 1 (Case 2)

(Mathur, 1954) had come across cases of scrub typhus previously in the months of September and October in Karnal district, the case was kept under observation. On the fifteenth day of his disease the Weil-Felix reaction showed a rise of titre from 1/50 to 1/125. He was put on synthomycetine. To begin with he was given 250 mg. six hourly. The temperature came down by crisis 24 hours after the administration of the drug, and the patient looked better, although he was still dazed, had a vacant look, was mentally dull, hard of hearing and was sweating. The temperature and the dose of synthomycetine are shown in Fig. 1. On the 17th October he looked still better and he seemed to be taking interest in his surroundings although he was still hard of hearing and quiet. Till one week after the temperature had come down his sensorium was dull, but was gradually clearing. He could gradually understand questions and answered them in low tones. Series of Weil-Felix tests done in this case were as follows:

Date	*9-10*	*14-10*	*16-10*	*19-10*	*22-10*	*28-10*	*2-11*
OXK	50	125	500	250	125	125	83
OX 2	50	50	50	—	—	Neg.	—
OX 19	25	Neg.	Neg.	—	—	Neg.	—

The blood clot from this patient was emulsified in saline after removing the serum and was injected intraperitoneally in a white mouse which died 26 days after the injection. On postmortem the spleen was found to be enlarged. An emulsion of the spleen was injected into another white mouse which died 22 days later. This mouse showed obvious ascites, and on portmortem showed splenic enlargement and ascitic fluid. The smears made from peritoneal scraping, showed Rickettsia.

Case 3—G.S., a 35 years old farmer coming from village Zarifa was admitted into the K. E. hospital, Karnal, with the complaints of 11 days' continuous fever, cough and constipation. He complained of body pains and pains in his limbs. His eyes were congested, his face was flushed, and the tongue was dry and coated. The abdomen was not tympanitic and there was no enlargement of the liver and spleen. There was no eschar, no rash and no adenopathy. His Widal test was negative, but tthe Weil-Felix test showed the following result:

Date	*21-10*	*28-10*	*31-10*	*4-11*
OXK	25	83	250	500
OX 2	Neg.	Neg.	Neg.	Neg.
OX 19	Neg.	Neg.	Neg.	Neg.

The congested eyes, flushed face, the negative Widal and the rising titre of OXK established the diagnosis of scrub typhus in this case. This case was not given any specific treatment, but he recovered. His temperature chart is shown in Fig. 2.

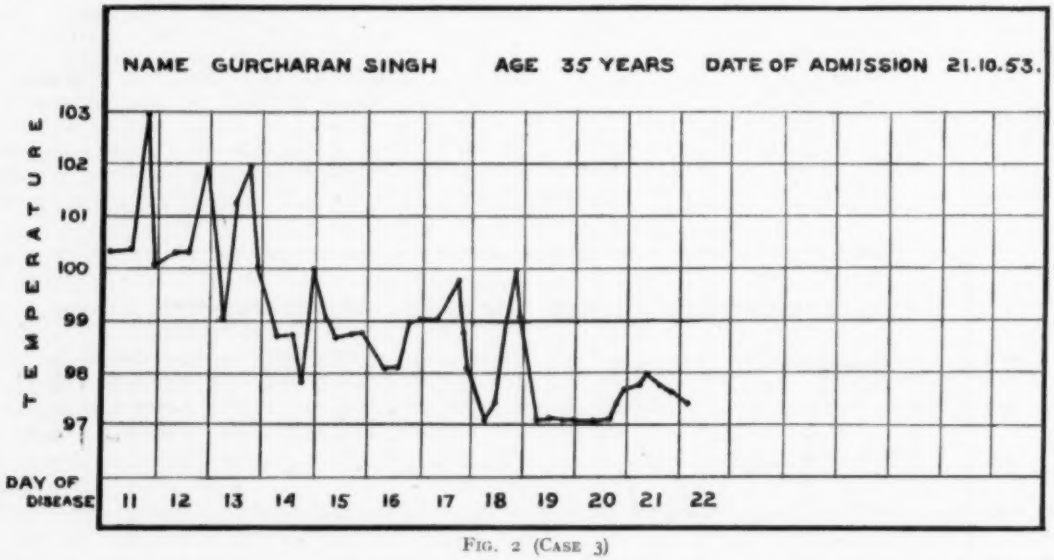

FIG. 2 (CASE 3)

Case 4—P. S., a 30 years old farmer coming from the village of Sheikhupura in Karnal district was admitted into the K. E. hospital, Karnal with the complaints of continuous fever and body aches of 11 days' duration. He was also constipated. There was a discrete papular rash of the size of small peagrains on his back, thighs, legs, forearms and back of hands. This rash appeared 5 days after he got fever. The face, chest and abdomen were free from rash. The spleen was enlarged 2 fingers below the costal margin and was firm. There was no eschar and no lymphadenopathy. His abdomen was not tympanitic. He was mentally quite alert, but suffered from severe body pains. His Weil-Felix reaction was as follows:

Date	*28-10*	*31-10*	*5-11*
OXK	25	83	83
OX 2	Neg.	50	50
OX 19	Neg.	—	—

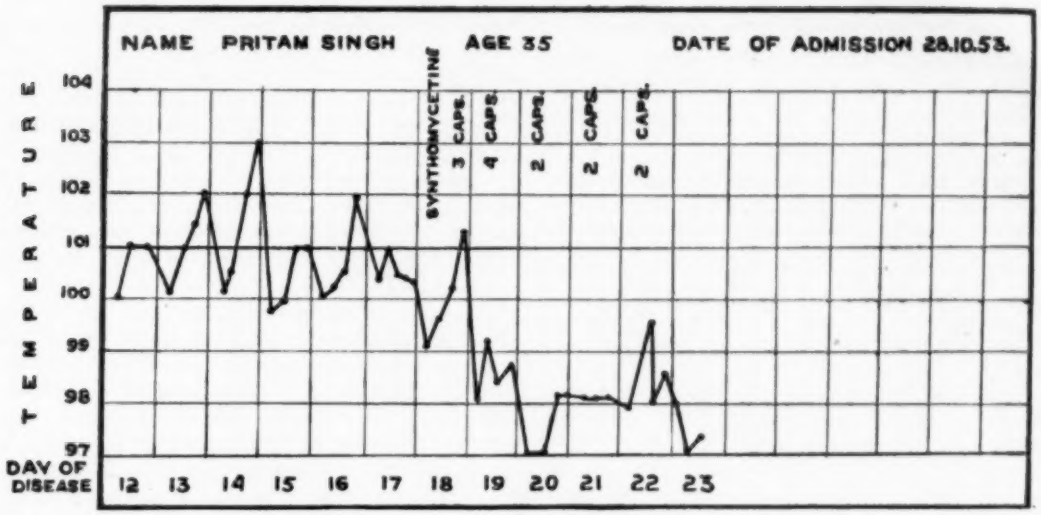

FIG. 3 (CASE 4)

This case was diagnosed on the strength of the history of body pains, fever and rash. The titre of OXK did not rise very much. Some cases of scrub typhus, however, may not give a positive Weil-Felix reaction. If the skin rash had not come out in this case it would have been difficult to diagnose it. This case was given synthomycetine 250 mg. six hourly. There was immediate response with the temperature falling down to normal 18 hours after the administration of the drug. The temperature chart of this case is shown in Fig. 3.

DISCUSSION

The four cases reported here are by no means all the cases of scrub typhus occurring in the district. The fact is that the average practitioner is not aware of the incidence of scrub typhus in the Punjab. These cases are missed by them and treated as cases of malaria because of the seasonal coincidence of the two diseases. They are also mistaken for cases of typhoid fever, but cases of scrub typhus do not show any abdominal signs. Because of the short course some cases are mistaken for cases of paratyphoid fever, because of the body pains they may be missed for cases of dengue, and because of rash for measles. Some cases have an acute onset with fever, rigidity of the neck and unconsciousness and may be mistaken for cases of meningitis. The disease should be suspected in all P.U.O. (pyrexia of unknown origin) cases in the rural areas during and after the rainy season up to the month of December. All cases may not show typical signs and symptoms of scrub typhus but the Weil-Felix test would usually show agglutination against OXK. It is important that this test is repeated at about 4 days' intervals to see the rising titre which is diagnostic when the initial titre is low. High titre of above 1/250 even in the first test is also diagnostic. The Weil-Felix test does not become positive till the 10th to 14th day. Krishnan (1949) found that nearly 35 per cent cases gave a negative reaction, and 90 per cent of his positive cases gave a titre of 1/125 to 1/250. Only 10 per cent showed a titre above 1/500.

Some epidemiological data—The Karnal district is situated on the western side of the river Jamuna which overflows its banks in the rainy season. Some canal irrigated areas from where some of the cases came are also flooded in the rainy season. The areas adjacent to Jamuna and other areas were jungles, which were reclaimed by the Central Tractor Organisation and now are farms. People who have migrated to these lands are susceptible to this disease. The local people are more immune than the new settlers. The rodents that infest these areas and their ectoparasites have not yet been studied. The disease occurs during the rainy season and after it when farmers go to fields either to clear the jungle and grass or to sow new crops. All cases so far discovered have been among the males who are more likely to be victims of the disease due to their outdoor occupation. Such epidemiological conditions prevail in other parts of the Punjab also and it is possible that the disease occurs in canal irrigated areas and in those districts through which rivers flow and which are subject to flooding and growth of jungles, grass and shrubs.

SUMMARY

1. The occurrence of scrub typhus in the Karnal district of the Punjab is reported.
2. Four cases are described.
3. The differential diagnosis is discussed.
4. It is emphasised that the disease occurs in the rural areas but is missed.

5. The importance of rising titre of OXK in cases showing low titre of agglutinins is emphasised.

6. It is possible that scrub typhus occurs in other parts of the Punjab and is not confined to Karnal district only.

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STUDY OF TITRE OF TAB AGGLUTININS IN HEALTH AND DISEASE IN RAJASTHAN

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Topley (1933) pointed out that the presence of antibodies against a given organism is an index of the prevalence of infection by that organism in a particular region. He concluded after reviewing the available evidence "That whatever may be our views with regard to the mode of formation of normal antibodies, there is now no doubt that the different frequencies observed in different countries, age group, etc., are highly correlated with the risk of the infection to which these groups are exposed. This information if collected from random samples of population from a particular area will be of value in enabling us in establishing normal levels of antibodies against a particular disease endemic in that region. Further such surveys would be of importance in assessing the value of preventive measures".

In most of the areas where laboratory facilities for diagnosis of the various types of fevers are not available and these are diagnosed as pyrexias of unknown origin, the data regarding the normal titres would help the clinician interpreting the laboratory reports with regard to the Widal test, and would also help the bacteriologist in carrying out further investigations. Immunological methods have been employed in most of the laboratories for diagnosing cases of enteric groups of fevers, but so far very few people have utilised this method to determine the endemicity of diseases in different regions. Ideal methods of establishing these would be actual isolation of the causative organisms either from the random population or a proper survey of water and sewage contamination. However, these investigations require elaborate arrangements, large amount of equipment and a team of trained personnel, which are not usually available in most of the laboratories. Yet the comparatively simple agglutination tests when carried out with proper precautions can yield good results.

Recent researches in the last two decades in different parts of the world, where the titres of agglutinins in samples of population have been estimated, have provided valuable data; Pasricha *et al* (1936) are pioneers in this field in India.

They have estimated the 'H' and 'O' agglutinins of the enteric group of organisms in the sera of certain individuals admitted into the Carmichael Hospital for Tropical Diseases in Calcutta and have stressed the importance of serological surveys to mark out the degree of infection in different parts of India.

When the published data are carefully studied, one feels the need of more detailed information about the frequency of distribution of 'O' and 'H' agglutinins for organisms of the typhoid and paratyphoid fevers in the sera of normal persons in India. The fall in frequency of agglutinins among the population is a result of wearing off of the effect of infection. The presence of agglutinins developing as an anamnestic reaction in nonenteric fever cases following immunisation or a previous attack of enteric fever further makes the interpretation of the results difficult. In our series the complication due to the second factor is eliminated because of the fact that most of the population has not been immunised against T.A.B. infection. It would be beyond the scope of this paper to review in any detail the extensive literature bearing on normal agglutinins and the prevalence of the various types of enteric fevers in different parts of the world. However, an attempt has been made to present the figures obtained for the various agglutinins in different parts of the world (Table 1) and percentage of the incidence of the various types of enteric fevers prevalent in different parts of India (Table 2) along with our data.

The purpose of our present investigation is:

1. To establish in this area the significant titres of 'O' and 'H' agglutinins for the different groups of enteric organisms.

2. To determine the percentage of incidence of the various types of enteric fevers.

3. To record the presence of agglutinins in sera for the typhoid and paratyphoid fevers.

250 cases in our series were from a random sample of patients attending the out-patient's department of the S. M. S. Hospital for minor ailments unassociated with fever. The other 200 cases were clinically diagnosed as belonging to the enteric group of fevers.

TECHNIQUE

In the former series each serum was put up in five dilutions ranging from 1/20 to 1/320 and tested against

TABLE I—PERCENTAGE SHOWING AGGLUTININS AT SPECIFIC TITRES AND OVER

Authors, Year, Country/District	No. of cases	*Typhosus* 'H' 1/20	*Typhosus* 'H' 1/40	*Typhosus* 'H' 1/80	*Typhosus* 'O' 1/20	*Typhosus* 'O' 1/40	*Typhosus* 'O' 1/80	*Typhosus* 'O' 1/160	*Paratyphosus A* 'H' 1/20	*Paratyphosus A* 'H' 1/40	*Paratyphosus A* 'H' 1/80	*Paratyphosus A* 'O' 1/20	*Paratyphosus A* 'O' 1/40	*Paratyphosus A* 'O' 1/80	*Paratyphosus B* 'H' 1/20	*Paratyphosus B* 'H' 1/40	*Paratyphosus B* 'H' 1/80	*Paratyphosus B* 'H' 1/160	*Paratyphosus B* 'O' 1/20	*Paratyphosus B* 'O' 1/40	*Paratyphosus B* 'O' 1/80	*Paratyphosus B* 'O' 1/160	*Paratyphosus B* 'O' 1/320
1. Rosher and Fielden (1922), London	181	3·0	...	...	...	...	...	...	...	...	...	...	...	...	4·0	...	...	...	...	...	...	...	...
2. Gardener (1929), England	147	...	...	...	49·0	2·1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3. Smith and others (1930), England																							
Males	156	23·3	21·6	17·2	...	...	...	...	11·6	9·0	6·4	...	...	...	9·7	9·1	5·2	...	...	...	...	...	...
Females	146	4·7	2·7	0·7	...	...	...	...	...	...	...	...	...	...	2·0	1·3	...	...	...	...	...	...	...
4. Havens and Mayfield (1931), Albany	1136	23·0	9·0	3·0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5. Dulaney and others (1932), Memphis	100	...	...	20·0	...	...	11·0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6. Gardener and Stubington (1932), England	50	...	...	...	38·0	6·0	2·0	...	...	...	...	...	...	...	...	...	...	...	12·0	2·0	...	...	...
7. Horgan (1932), Africa (Sudan)	70	...	...	...	7·1	...	...	...	...	...	...	...	...	...	...	...	...	...	4·2	...	...	...	...
8. Giglioli (1933), British Guiana	350	24·6	16·0	8·3	16·3	3·7	0·9	...	9·4	6·9	3·7	...	...	...	6·0	3·1	2·3	...	20·3	5·7	2·0	...	...
9. Lewin (1934), South Africa	442	10·6	...	2·9	45·0	4·5	2·0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10. Amzel and others (1934), France	346	6·9	...	4·3	...	...	...	...	1·2	...	0·4	...	...	...	5·0	...	1·3	...	...	...	...	...	...
11. Bole (1935), America (Ohio)	17	82·3	76·4	64·7	58·9	47·0	35·3	...	29·4	29·4	23·5	...	...	...	29·4	29·4	11·8	...	...	...	...	...	...
12. Pasricha (1933), Darjeeling	85	32·0	14·0	8·0	...	...	...	...	9·0	4·0	1·0	...	...	...	25·0	12·0	3·0	...	...	...	...	...	...
13. Do. (1933), Calcutta	280	20·7	10·7	2·8	11·8	6·4	1·8	...	6·0	2·5	0·7	2·1	1·0	0·7	7·5	5·7	2·5	...	5·0	0·7	0·7	...	...
14. Alves (1936), Rhodesia	530	...	5·1	...	...	9·33	2·67	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15. Present series (1953), Rajasthan	250	7·5	1·0	...	35·5	10·0	3·0	1·0	4·5	1·0	...	25·5	5·0	1·0	13·0	6·0	6·0	4·5	56·5	35·5	17·0	9·5	2·0

the following suspensions of typhoid and paratyphoid group of organisms obtained from the Central Research Institute, Kasauli.

B. typhosus 'O' and 'H'.
B. paratyphosus A, 'O' and 'H'.
B. paratyphosus B, 'O' and 'H'.

The agglutination reaction of the serum mixture was carried out by Dreyer's agglutination technique. In cases of enteric fever the diagnosis was established by blood culture if the patients were admitted during the early stage of the disease or by detecting the presence of agglutinins well over the significant titre in their sera if admitted later. The significant titre was arrived at by carrying out a large number of experiments the results of which are shown later.

Observations

Our observation in 250 apparently normal people along with those of others working in different parts of the world are given in Table 1.

It would be evident from the figures in Table 1 that the percentage of sera showing agglutinins against paratyphoid B 'O' suspensions is comparatively higher in our series. The percentage of sera giving a positive result in 1/40 dilution ranged from 0·7 per cent to 5·7 per cent in other parts of the world including Calcutta, whereas our figures were as high as 35·5 per cent; when the agglutination in a titre of 1/320 was taken into account, the other workers did not report any positive results whereas we had 2 per cent of our cases giving positive result in this fairly high dilution.

The paratyphosus B 'H' agglutinins were positive only in 6 per cent of cases in a dilution of 1/80 in our cases. Although this figure was very much higher than the one reported by Pasricha from Calcutta i.e., 3 per cent, yet it was very much lower than the percentage of positives reported from Ohio i.e., 11·8 per cent. As regards the typhoid 'H' agglutinins they were positive in a 1/40 dilution in 1 per cent of our cases whereas the figures obtained by Pasricha were 10·7 per cent from Calcutta and 14 per cent from Darjeeling. In case of typhoid 'O' agglutinins 3 per cent of our cases gave a positive result in 1/80 dilution; this obviously means that the persons giving a positive typhoid 'O' agglutination test have been infected with certain organisms possessing an antigen common with 'T O' agglutinogen.

As regards paratyphosus A 'H' agglutination our figures are 0 per cent at 1/80 while Pasricha records 0·7 per cent and 1 per cent respectively and Bole 23·5 per cent. For paratyphosus A 'O' our findings of 1 per cent is at par with Pasricha's figure of 0·7 per cent. The others have not recorded their findings.

The results of our findings with regard to the relative incidence of various types of enteric group of fevers are given in Table 2 and the percentage of sera agglutinating at various dilutions in Table 3.

Table 2—Showing Study of Percentage Incidence of the Various Enteric Fevers by Different Authors in India in Different Periods

Author and Place of Work	*No. of Cases*	*B. Typhosus*	*B. Para A*	*B. Para B*	*B. Para C*
Soman (1934), Bombay (1934)	41	95·4%	4·6%	–	–
Minchin (1939), Madras and Coonoor (1936-38)	213	97·7%	1·3%	0·94%	–
Karunakaran and Pillai (1942), Travancore (1940-41)	201	88·6%	11·3%	–	–
Napier (1942), Calcutta (1938-41)	33	86·8%	13·2%	–	–
Chatterji*(1942), Calcutta (1936-39)	199	93·8%	5·2%	1%	–
Hays and Freeman (1945), India (1941-45)	1299	72·5%	16·2%	0·54%	0·77%
Goyal and Shaik (1946), Lahore (1942-44)	172	83%	17%	–	–
De (1947), Calcutta (1936-40)	269	94·3%	5%	0·7%	–
Present series, Rajasthan (1952-53)	250	83·6%	15%	1%	0·4%

Table 3—Showing Percentage of Sera Agglutinating at Various Dilutions

Organisms	*'H' agglutinins* 1/20	1/40	1/80	1/160	1/320	*'O' agglutinins* 1/20	1/40	1/80	1/160	1/320
B. typhosus	7·5	1	–	–	–	35·5	10	3	1	–
B. paratyphosus A	4·5	1	–	–	–	25·5	5	1	–	–
B. paratyphosus B	13	6	6	4·5	–	56·5	35·5	17	9·5	2

TABLE 4—SHOWING MONTHLY INCIDENCE OF TYPHOID GROUP OF FEVERS IN 1951

Month	Typhoid			Paratyphoid A			Paratyphoid B	
	Present series	Goyal & Shaik	Trivedi & De	Present series	Goyal & Shaik	Trivedi & De	Present series	Trivedi & De
August	12	11	21	3	1	—	1	1
September	14	3	15	2	—	2	1	1
October	16	3	14	2	1	—	1	—
November	15	4	16	4	2	2	—	2
December	5	5	3	1	1	1	—	—
January	6	3	1	1	1	3	—	1
February	8	1	1	1	1	3	—	—
March	6	3	8	3	—	2	—	—
April	18	5	8	3	2	—	—	—
May	10	17	9	1	1	2	—	1
June	18	11	7	4	1	2	—	—
July	15	3	13	—	2	1	—	1

DISCUSSION

We find from Table 2 that the incidence of paratyphoid B fever in this part of the country is only about 1 per cent. This does not explain the high figure of 35·5 per cent (Table 3) for B 'O' agglutinins obtained by us. It is also evident that the figures for sera agglutinating typhoid O suspensions are higher than those recorded by other workers. Typhoid fever is also not endemic in this part of the country as a very small percentage of normal cases have agglutinins for typhoid H antigen.

Certain other causes have to be borne in mind to explain this state of affairs. Gastroenteritis is responsible for about 18 per cent of the total number of patients attending the S. M. S. Hospital, Jaipur, for treatment, while an appreciable number of persons are probably suffering from subclinical infection. This figure is a little above the figures from Agra (13 per cent). Our preliminary investigations on this line indicate that some of the Salmonella belonging to the group B of Kauffman-White scheme may be responsible for this rise of titres against para B 'O' and typhoid O organisms. Further experiments are being conducted to elucidate the problem.

According to Lankin, in tropical countries paratyphoid appears to be more prevalent than typhoid. Manson-Bahr also feels that though B. typhosus is world wide in distribution, infection due to paratyphoid A is more common in the east. The results of our findings are in agreement with other workers in India where the infection due to B. typhosus (83·6 per cent) appears to be more prevalent than that of paratyphoid fever. Paratyphoid A (15 per cent) is more common than para B (1 per cent).

It is also evident from Table 4 that the incidence of these fevers in this part of India is high during the months from April to November. The number of cases of typhoid fever ranged from 5 to 8 during the months of December to March whereas the figures for April to November were 10 to 18. The incidence of paratyphoid fevers on a seasonal basis was on similar lines.

CONCLUSION

As regards the significant titres it may be concluded from Table 3 that the normal titres for typhoid 'H' and para A 'H' are more or less negligible and para B 'H' titre is comparable to that given by Pasricha (although the figures given by him are on the low side). The significant titres for typhoid 'O' and para A 'O' may be taken at 1 in 40. The titre for para B 'O' was very much higher over here i.e., 1 in 80.

Enteric fever is not endemic in this part of the country. The high titre of para B 'O' and also to some extent of typhoid 'O' might be due to the Salmonella group of organisms causing gastroenteritis which is fairly widely prevalent over here.

SUMMARY

1. Two hundred fifty apparently normal persons from a random sample of the population of Rajasthan were studied for determining the presence of agglutinins to the highest titre against the enteric group of organisms and the results were compared to those reported from other parts of the world.

2. Two hundred cases of enteric fevers were studied and the relative incidence of the various types were recorded.

3. The high para B 'O' titre suggests the existence of subclinical infection with organism of the Salmonella group B of Kauffman-White scheme.

4. A random sampling of the significant titres obtained in Rajasthan showed that the normal typhoid 'H' and para A 'H' agglutinin content was more or less negligible as compared with that of Calcutta and other temperate zones. As shown in Table 1, our para B 'H' titre is comparable to that of Pasricha although his figures are rather on the low side.

5. The figures concerning the different types of enteric group of fevers are more or less comparable to those of other workers in India.

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THE USE OF AQUEOUS PLACENTAL EXTRACT IN THE TREATMENT OF VARIOUS OCULAR CONDITIONS WITH SPECIAL REFERENCE TO CORNEAL ULCERS

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The conception of tissue therapy dates back to 1933 when Filatov presented his observations that corneal transplants which had turned opaque regained transparency after grafting at the limbus of cadaver cornea preserved at a low temperature.

Filatov and his associates (1944) used various animal and vegetable tissues in this form of therapy. They used placenta, placental extracts, cod-liver oil, aloes, lip-mucosa and various other things. Tissue therapy includes autotransplants, homologous transplants, heterologous transplants, injections and rectal administration of tissue extracts. The most readily available homologous tissue is the human placenta. The placenta contains hormones, vitamins, enzymes, antibodies and various other factors.

Filatov's (1945) work on tissue therapy is based on the theory that tissues stored and preserved under unfavourable conditions become rich in substances which stimulate biochemical processes and regeneration. These substances have been called 'biogenic stimulators.' When placed in contact with a diseased tissue, these biogenic stimulators stimulate the regenerative processes of the organ by increasing the cellular metabolism, and pathological lesions diminish or disappear.

On experimental animals (frogs and rabbits) Filatov, Kovalski and Lalnik found that tissue implants speeded up cicatrization and epithelization of experimental wounds.

Kronenberg (1948) broke down the placental extract into four components: (1) Aqueous extracts containing water-soluble vitamins, hormones and most likely the biogenic stimulators; (2) lipoid extracts containing cholesterin and lecithin; (3) immune-gamma globulins containing many antibodies and (4) tissue coagulants containing a factor which lowers the blood-clotting time.

Kronenberg (*loc. cit.*) treated 24 patients in a variety of ocular conditions with one or several of the extracts mentioned above. He was of opinion that the aqueous extract might be of value in the treatment of virus diseases of the cornea and immune-gamma globulin in the treatment of uveitis. He, however, did did not corroborate Filatov's findings of favourable responses of cases of retinitis pigmentosa with placental therapy.

Gördüren (1950) treated 25 cases of retinitis pigmentosa—20 by implantation of placenta and 5 by injections of placental extracts. 94 per cent showed an increase of visual acuity, 38 per cent showed an increase of visual fields and 32 per cent a slight improvement in dark adaptation. He claimed better resuults in early cases and considered it less efficient in patients over 50 years. Sex had no bearing on the results obtained. Results obtained by placental extracts did not materially differ from those obtained by placental implantations. The rate of improvement (94 per cent) claimed by Gördüren, which is much higher than that found in the literature (27-87 per cent) is attributed to the method of preparation of placental extract.

Fromaget and Giffo (1949) obtained considerable improvement in cases of grave myopia by placental extract. There was improvement in visual acuity and absorption of choroidal exudates and vitreous floatuses. Saint-Martin (1948) treated 30 cases of complicated myopia. Improvement was marked in 8, appreciable in 14, doubtful in 6 and none in 2

Filatov and other workers (*loc. cit.*) reported the use of placental extract in a variety of ocular conditions. Arruga (1948) employed it in treating tuberculosis and herpetic keratitis, iritis, optic atrophy and pigmentary degeneration of the retina with various results.

The purpose of this paper is to assess the value of placental extract in certain ocular conditions, not hitherto tried, and to corroborate the work of Filatov and others. It is also the purpose of the experimental work now carried out to determine the nature of the biogenic stimulator. Attempts are being made to fractionate the extract in order to localise the active principle of the biogenic stimulator.

The material to be presented was obtained from a study of 26 cases treated with aqueous extract of human placenta. The placenta was obtained from women who had had a normal child birth. It was kept in a refrigerator for 6 days in a sterile covered container before the extract was prepared. The Wassermann reactions of the women were checked up. The ampoules containing the extracts were kept in a refrigerator all the time.

All these cases were admitted under one of us (B.K.D.G.), and were under strict observation till discharge. Twenty cases were of corneal ulcer, 2 of corneal opacity, 2 of corneal injury, 1 of retinitis pigmentosa and 1 of chorioretinitis. Six cases were females and 10 males and the age group was from 3 to 63 years.

Case Reports

Case 1—B. P. B., aged 35 years, male, cultivator, was admitted on 22-8-52 for sloughing corneal ulcer of the right eye involving the whole of the pupillary area with central prolapse of the iris. Hypopyon ++. Vision P. L. only, P. R.—nil. The case was admitted for evisceration. He was put on placental therapy. Nothing else was given except unguentum atropine (1 per cent). After the second injection marked improvement was noted. Hypopyon completely disappeared after the fourth injection. Ulcer completely healed up on the seventh day. Smoothness of the corneal surface was noticed from the second day after injection. He was discharged on the ninth day with vision 2/60. The placental extract was given by the intramuscular route. The first dose was 0·5 c.c. and subsequent doses were 1 c.c. No other complications, general or local, were noticed.

Case 2—G. N. D., aged 50 years, male, grocer, was admitted on 23-8-52 for corneal ulcer of the right eye. Hypopyon—nil. Vision F. M. only. He was put on placental extract injections (I.M.) and ung. atropine (1 per cent). Corneal surface became smooth on the third day and the ulcer completely healed up on the fourth day. He was discharged on the 23rd day with a vision of 6/9 and a very thin corneal opacity. After the ulcer had healed up, he was given placental extract subconjunctivally in 1 c.c. doses for three days. No reaction followed.

Case 3—L. R. S., aged 16 years, male, confectioner, was admitted on 29-8-52 for adherent leucoma of the right eye following injury to the eye while cutting wood. On the previous occasion he was admitted under one of us (B.K.D.G.) with prolapse of iris through the corneal wound and traumatic cataract with lens matter in the anterior chamber. The clinical appearance of the eye on admission this time was a big fairly dense opacity covering the whole of the pupillary area with iris adherent to the corneal scar. Vision—F. M. only. He was put on placental therapy both by the intramuscular and subconjunctival routes. He was discharged 11 days after placental therapy with no appreciable change.

Case 4—P. M., aged 40 years, male, clerk, was admitted on 29-8-52 for corneal ulcer of the right eye. Hypopyon—present. He was suffering from chronic simple glaucoma of both the eyes for a long time. Vision on admission—P. L. doubtful. He was put on placental extract injections by intramuscular route. Hypopyon absorbed after first injection. Ulcer healed up on the third day. He was discharged on the fifth day with vision 1/60. (He would have had much better vision but for the glaucomatous condition.) The only mydriatic used was homatropine hydrobrom 2 per cent solution twice a day.

Case 5—J. U., aged 21 years, female, was admitted on 24-8-52 for perforating injury of the right eye with a flying piece of glass on the same day. The conjunctiva, cornea and sclera at the limbus were cut. A triangular flap of the cornea was turned out. Vision—P. L. doubtful. The conjunctiva and sclera were stitched. The patient was put on atropine locally and penicillin parenterally. The anterior chamber was formed on the third day. From third day penicillin was omitted and placental therapy started. Corneal staining with fluorescein disappeared on the eighth day. The patient was discharged on the 14th day with vision of finger counting at 2 feet. There was no appreciable change in the corneal scar except that the surface became smooth.

Case 6—P. D., aged 18 years, female, was admitted on 30-8-52 for corneal opacity of both the eyes (macula R. E., leucoma L.E.). Vision R.E.—6/18, L.E.—F.M. only. He was treated with placental extract, given both subconjunctivally and intramuscularly. After 11 days of therapy no improvement was noticed and the patient was discharged.

Case 7—P. M., aged 48 years, male, was admitted on 2-9-52 for sloughing corneal ulcer of the right eye. Vision F. M. only. Whole cornea deeply staining with fluorescein. Hypopyon—nil. He was treated with placental extract.

After one injection of placental extract intramuscularly corneal surface became smooth. The ulcer completely healed up on the 5th day. He was discharged on the 16th day with vision 5/60.

Case 8—K. R., aged 29 years, male, was admitted on 3-9-52 for sloughing corneal ulcer of the right eye. Hypopyon+++. After one injection of placental extract the patient left the hospital. Treatment could not be continued and the case could not be followed up.

Case 9—C. N., aged 48 years, female, was admitted on 3-9-52 for sloughing corneal ulcer of the right eye. The whole of the cornea sloughed out. Vision—no F. M. Hypopyon+++. After one injection of the placental extract the patient left the hospital. Treatment could not be carried out and the case could not be followed up.

Case 10—M. B., aged 30 years, female, was admitted on 3-9-52 for hypopyon ulcer of the left eye with intracorneal abscess and hypopyon. Vision—P. L. only. After placental extract injections the hypopyon was absorbed on the 2nd day. Intracorneal abscess burst into the anterior chamber on the 4th day with reappearance of hypopyon. Paracentesis done on the 5th day. Ulcer healed up on the 14th day with adherent leucoma. The patient was discharged on the 21st day with vision of F. C. at 5 feet.

Case 11—M. K., aged 3 years, female, was admitted on 5-9-52 for corneal ulcer of both the eyes. The patient was put on placental therapy. The ulcers healed up on the 5th day and the patient was discharged on the 9th day.

Case 12—M. L., aged 30 years, male, was admitted on 5-9-52 for corneal ulcer of the right eye—the ulcer covering lower half of the pupillary area and below. Hypopyon++. Vision F. C. at 2 feet. He was put on placental therapy. Corneal surface became smooth on the 3rd day. The hypopyon was absorbed by the 4th day. Corneal ulcer healed on the 5th day. He was discharged on the 14th day with vision of F.C. at 8 feet.

Case 13—P. M., aged 63 years, male, was admitted on 11-9-52 for sloughing corneal ulcer of the right eye. The whole of the cornea stained deeply with fluorescein. Hypopyon++++. Vision—P. L. only. He was put on placental therapy. 3 days after the hypopyon was absorbed to such an extent that the upper part of the pupil could be seen. 6 days after the upper part of the cornea became clear. Subsequently no improvement was noticed and the lower part of the ulcerated cornea bulged followed by perforation. On the 20th day the eye had to be eviscerated (2-10-52). He was discharged on 11-10-52.

Case 14—N. C. D., aged 30 years, male, cultivator, was admitted on 11-9-52 for corneal ulcer of the right eye. The anterior chamber was full of pus. The whole cornea stained deeply with fluorescein. Vision—? P. L. He was put on placental therapy. The hypopyon was absorbed on the 6th day and the ulcer completely healed up on the 13th day. He was discharged on the 18th day with vision of F. C. at 1½ feet. (This case was previously treated with penicillin and vitamin A parenterally. Also paracentesis was done without any result).

Case 15—A. C. D., aged 40 years, male, was admitted on 17-9-52 for corneal ulcer of the right eye. The ulcer was deep-seated. Hypopyon++. Vision F. M. only. He was put on placental therapy. Hypopyon absorbed on the 2nd day. Ulcer healed up completely on the 11th day. The patient was discharged on the 14th day with vision 6/36.

Case 16—A. L. S., aged 50 years, male, was admitted on 20-9-52 for corneal ulcer of the right eye. Hypopyon++. Vision P. L. only. He was put on placental therapy. The hypopyon was absorbed on the 11th day and the ulcer completely healed up on the 13th day. Vision was not recorded on discharge through oversight.

Case 17—S.M., aged 30 years, male, was admitted on 19-9-52 for sloughing corneal ulcer of the right eye. The lids were oedematous, there was chemosis of the bulbar conjunctiva, sloughing out of the cornea and massive hypopyon. He was put on placental therapy along with penicillin and vitamin A parenterally. No improvement was noticed. There followed a total prolapse of the iris on the 14th day and evisceration was done on the 15th day.

Case 18—P. R. M., aged 15 years, male, was admitted on 11-9-52 for retinitis pigmentosa both eyes. He was put on placental therapy. There was no improvement in the visual acuity nor in the field of vision. Subjective feeling was not in any way altered.

Case 19—S. C. M., aged 35 years, male, was admitted on 18-9-52 for old central chorioretinitis of both the eyes. The Wassermann reaction was negative. The Mantoux test with 1/10,000 dilution was negative. He was put on placental therapy. No improvement was noticed in his subjective feeling. The visual acuity and field of vision, both central and peripheral, remained unaltered.

Case 20—M. D., aged 9 years, female, was admitted on 2-10-52 for corneal ulcer of the left eye following herpes zoster ophthalmicus. There was deep linear corneal ulcer about 3 mm. placed centrally. The anterior chamber looked hazy. Vision—F. C. at 1 foot. She was put on placental therapy. Corneal surface became smooth on the 3rd day and the ulcer completely healed up on the 5th day. The patient was discharged on the 7th day with vision of F. C. at 5 feet.

Case 21—M. S., aged 26 years, male, was admitted on 18-9-52 for corneal ulcer of the right eye. Hypopyon was present. He was put on placental therapy. The hypopyon was absorbed on the 4th day and the ulcer completely healed up on the 7th day.

Case 22—J. D., aged 60 years, male, was admitted on 13-10-52 for sloughing corneal ulcer of the left eye. Intracorneal collection+++. Hypopyon++. Vision P. L. only. He was put on placental therapy. The hypopyon disappeared on the 2nd day, intracorneal collection on the 7th day and the ulcer completely healed up in 9 days. Vision on discharge was 6/60.

Case 23—P. C. M., aged 30 years, male, was admitted on 16-10-52 for corneal ulcer of the left eye. Hypopyon++. Vision F. M. only. Placental therapy started. The hypopyon was absorbed on the 5th day. Ulcer healed up on the 9th day. Patient was discharged on the 10th day with vision 6/60.

Case 24—B. R. B., aged 34 years, male, was admitted on 18-10-52 for corneal ulcer of the right eye. Hypopyon +++. Cornea diffusely stained throughout with fluorescein. Vision P. L. only. Placental therapy started. The hypopyon was absorbed on the 7th day. Ulcer healed up on the 14th day. Vision on discharge was 6/60.

Case 25—D. N. D., aged 23 years, male, was admitted on 23-10-52 for corneal ulcer of the left eye. Vision P. L. only. With placental therapy the ulcer healed up on the 10th day. Vision on discharge was F. C. at 5 feet.

Case 26—R. K. R., aged 46 years, male, was admitted on 19-10-52 for injury of the right eye with glass splinter.

Cornea—linear cut from 10 to 4 o'clock and the iris incarcerated in the wound. He was put on atropine drops (1 per cent) and placental therapy. On the 8th day the corneal surface looked absolutely smooth with a very thin scar.

Discussion

Almost all the cases of corneal ulcer showed a very gratifying result. The ulcers healed up rapidly even in hopeless cases and the hypopyon was rapidly absorbed. The following table would show briefly the results obtained in the present series of corneal ulcers.

Serial No.	*No. of days taken for the ulcer to heal*	*No. of days taken for the hypopyon to absorb*	*Result*
1	7	4	Cured
2	4	—	Cured
4	3	1	Cured
7	5	—	Cured
8	Treatment could not be continued		—
9	" " " " "		—
10	14	2	Cured
11	5	—	Cured
12	5	4	Cured
13	—	—	Bad
14	13	6	Cured
15	11	2	Cured
16	13	11	Cured
17	—	—	Bad
20	5	—	Cured
21	7	4	Cured
22	9	2	Cured
23	9	5	Cured
24	14	7	Cured
25	10	—	Cured

Percentage of successful treatment is 80. But if the two cases where the treatment could not be continued, be excluded, the percentage would rise upto 88 per cent.

Of interest in this series, no other treatment was given except application of ung. atropine daily. Only in Case 10 paracentesis was done and in Cases 13 and 17 penicillin was administered in addition, parenterally. It may also be mentioned here that all the ulcer cases were unselected and their severity varied from mild to severe sloughing type with massive hypopyon and even with perforation. Three cases were actually admitted for evisceration, but all of them were completely cured with this regime of treatment and gained fair amount of workable vision.

Of the 6 other cases in the present series who did not have corneal ulcers, only the two cases of corneal injury had satisfactory results. In the rest of the cases no appreciable results were obtained. However it is not desirable at this stage to come to a definite conclusion about them for the very limited number of cases treated so far.

In a few cases swabs from the conjunctival sac and scrapings from the surface of the ulcer were cultured and after commencement of treatment with placental extract these were daily examined. There was no change in the bacterial flora during the ulcerative stage. From this it is assumed that placental extract has neither bacteriostatic nor bactericidal properties. The blood was examined in a few cases for total and differential count before and during the treatment. No appreciable difference was noted in the subsequent examinations.

From the above facts it is safe to assume that the aqueous extract of placenta has a definite influence on the repair of the corneal ulcer and absorption of the hypopyon, not hitherto claimed by any other agent. The reason that this fact has not been claimed by any other worker previously is possibly due to the different method in preparing the placental extract. The placental extract possibly acts by liberating 'biogenic stimulators' in the system. These stimulators either act throughout the system or are selectively taken up by the diseased tissues or specifically by the cornea. These substances stimulate the cellular metabolism and thereby the regenerative process of the diseased tissue. By this process they not only cut short the diseased process but help in repairing the diseased tissue at an unexpected rate.

Summary

1. The conception of tissue therapy is discussed and the work on various ocular conditions is reviewed.

2. 26 cases were treated with aqueous extract of human placenta given parenterally.

3. Old corneal opacities did not respond to treatment with placental extract.

4. A case of retinitis pigmentosa and a case of central chorioretinitis did not respond to treatment with placental extract.

5. Recent corneal injuries responded very well. There was rapid healing with epithelization. The corneal surface became smooth and the scar almost invisible.

6. Of the 18 cases of corneal ulcer treated with placental extract, 88·8 per cent healed up with favourable results. The absorption of hypopyon was rapid, the smoothness of the uclerated surface became evident within a very short period and the resulting scar was much less than could be expected under other methods of treatment.

7. It is assumed that the placental extract given parenterally acts by releasing the 'biogenic stimulator', which is taken up by the diseased cornea. These substances not only arrest the spread of the diseased process but stimulate the regenerative process of the diseased tissue.

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PLASMA CHOLESTEROL AND ITS FRACTIONS IN APPARENTLY HEALTHY INDIVIDUALS

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INTRODUCTION

Cholesterol is an important constituent of the cells of various tissues in the body. Total whole blood cholesterol values vary within wide limits in healthy individuals. According to Sperry (1938), routine determination of whole blood cholesterol should be abandoned since the cells contain only free cholesterol and in quite constant amounts, no change in pathological condition being noted. Hence, it appears that plasma cholesterol values may have more significance. It has, in fact, been observed that pathological variations occur more in plasma cholesterol, and particularly in the two different fractions of free and esterified forms rather than in the values of total cholesterol (Hawk).

The usual method of estimation involves the use of the well known reagent of Liebermann and Burchard. However, free and bound cholesterol do not give rise to the same depth of colour. The velocity of development of colour differs appreciably. Further, the possibility of the existence of substances besides cholesterol in blood which contribute to the colour development cannot be excluded (Reinhold, 1936). It appears therefore desirable to determine the total cholesterol after preliminary saponification to liberate esterified cholesterol from combination. Free cholesterol is best determined by precipitation and is obtained as the insoluble digitonide, the precipitate being treated as described below.

About one-third of the cholesterol is present as free cholesterol and the remainder esterified. Many of the data in literature are in terms of total cholesterol. But the distribution of cholesterol between free and ester forms is attracting more attention, particularly in the diagnosis of liver disease. Practically none has attempted the determination of the free and esterified fractions of cholesterol in plasma in our country, and we have, therefore, undertaken the study of these fractions in apparently healthy individuals of age group 20-30 years.

EXPERIMENT

The method of Schonheimer and Sperry (1934) as modified by Sobel and Mayer (1945) was employed. The original method of Schonheimer and Sperry which requires only 0·2 cc. of plasma is a complicated micro procedure. The modification suggested by Hawk is simpler and yields more accurate results.

An acetone alcohol mixture was used in the proportion of 1:1 to precipitate proteins and to extract the free cholesterol and cholesterol esters from 1 c.c. of plasma. The cholesterol was precipitated with an aqueous solution of digitonin (400 mg. in 100 cc. water), either before saponification (free cholesterol) or after (total cholesterol), and the separated digitonide was purified by washing once with acetone ether mixture (1:1) and then twice with pure ether alone. The tube containing the precipitated and washed cholesterol digitonide was heated on a sand bath at a temperature of 110° to 115° degrees centigrade in an oven for about 30 minutes. The bath was then removed from the oven, and while the centifuge tubes were still in the hot sand, 2 cc. of acetic acid was added from a burette, the contents of the tube stirred well with a glass rod, and the tube allowed to remain in the sand for another 2 minutes and then removed and cooled to the room temperature. The tubes were then placed in a water bath at 25 degrees centigrade from which

TABLE 1

	Total Cholesterol		*Free Cholesterol*		*Esterified Cholesterol (By calculation)*	
	Range mg. %	*Mean mg. %*	*Range mg. %*	*Mean mg. %*	*Range mg. %*	*Mean mg. %*
Senapati, Subrahmanyam & Banerji	155·2 – 190·2	171·8 ±1·529	47·1 – 65·2	54·03 ±0·844	99·0 – 143·0	117·8 ±1·728
Thaunhauser (1947)	150 – 260		40 – 70		110 – 190	
Van Slyke *et al* (1935)		232		82		150

light was excluded, and allowed to come to temperature equilibrium. 4 cc. of cold acetic anhydride sulphuric acid reagent was added, mixed well and the tubes were kept in the bath for 27 minutes, and the colour developed compared with that of a standard cholesterol solution in acetic acid similarly treated in a colorimeter. Esterified cholesterol values are calculated from the difference between free and total cholesterol values.

Results

The results are given in Table 1 compared to the values given in literature. The mean of total plasma cholesterol was found to be 171·8 mg. per cent ±1·529 (S.D 8·236 and S.E. of S.D ±1·081). The range was from 155·2 to 190·2 mg. The mean of free cholesterol was 54·03±0·844 (S.D. 4·544 S.E. of S.D. ±0·597). The range for free cholesterol was 47·1 to 65·2 mg. per cent. The mean of esterified cholesterol was 117·8 mg. per cent±1·728 (S.D. 9·299 ±1·221). The range was from 99·0 to 130·6 mg. per cent.

The detailed results are given in Table 2.

Table 2—Plasma Cholesterol and its Fractions (30 Males)

No.	*Total Cholesterol mg. %*	*Free Cholesterol mg. %*	*Esterified Cholesterol mg. %*
1	160·0	50·0	110·0
2	178·0	47·8	130·6
3	155·2	56·2	99·0
4	165·0	51·4	113·6
5	172·4	65·2	107·6
6	185·1	60·2	124·9
7	175·0	54·0	121·0
8	169·8	54·4	115·4
9	165·2	52·1	113·1
10	171·6	60·4	111·2
11	190·2	47·1	143·1
12	182·8	54·1	128·7
13	176·4	55·2	121·2
14	172·2	50·4	121·8
15	168·4	49·2	119·2
16	182·0	54·1	127·9
17	176·2	55·0	121·2
18	172·1	50·4	121·7
19	168·6	49·4	119·2
20	165·0	51·4	113·6
21	168·9	53·9	115·0
22	164·2	53·3	110·9
23	178·4	47·8	130·6
24	171·6	60·4	111·2
25	165·2	51·3	113·9
26	155·2	56·2	99·0
27	169·8	54·4	115·4
28	185·3	60·3	125·0
29	174·3	52·2	121·1
30	170·3	63·1	107·2
Mean	171·8±1·529	54·03±1·849	117·80±1·728

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TREATMENT OF ARSENIC AND GOLD ENCEPHALOPATHY WITH BAL

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BAL or British antilewisite (2, 3-dimercaptopropanol) has been used with success in all types of metallic poisoning including arsenic, bismuth, mercury and gold. Its efficacy as an arsenical antidote and its power of reversing the tissue damage caused by arsenicals depend on its ability to form relatively stable ring compounds with arsenoxides. It diminishes the reaction of the arsenicals with the tissues and increases urinary excretion from the system. BAL is rapidly metabolised and excreted in the urine as a closely related thiol (Ragan *et al*, 1947). Since its discovery it has been successfully used in all types of arsenical intoxicity including exfoliative dermatitis (Peters *et al*, 1947; Longscope and Leutscher, 1946), in purpuric haemorrhages (Schrumpf, 1947) and polyneuritis (Malhotra, 1951) and arsenical encephalopathy (Eagle and Magnuson, 1946). The Council of American Pharmacy and Chemistry reported its use in the treatment of 55 cases of arsenical encephalopathy. Bureau *et al* (1951) successfully treated cases of gold intoxication with dimercaptopropanol. Cohen *et al* (1947) has found it very successful in cases of encephalopathy developed after parenteral gold injections.

Case Reports

Case 1—A clerk in the local bank was diagnosed on the basis of lung-findings, blood and x-ray examination as tropical eosinophilia of the lungs by a private practitioner. He was treated witth acetylarson injections. He had no trouble with the first injection but after the second intramuscular injection of acetylarson he developed irritating cough, pain on the chest and lost consciousness within twenty-four hours of administration of injections when he was brought to the hospital. On admission the following findings were recorded:—Pulse—150 per minute, regular, good volume and tension; temperature—102°F.; respiration—45 per minute; blood pressure—98/68. Slight cyanosis was present, pupils were normal in size, reacting sluggishly to light. There was no neck rigidity; knee

and ankle jerks were sluggish. Heart sounds were normal. Lung—no impairment of percussion note but a few rales and rhonchi were heard in both the bases.

INVESTIGATIONS: Lumbar puncture was done; the fluid was clear, with pressure of 90 cm., protein, 60 mg. per cent; sugar, 100 mg. per cent; chlorides, 660 mg. per cent; no organisms on gram staining found; cell count—10 per cmm.

Catheter specimen of urine revealed no abnormality.

Blood examination showed no malarial parasite in thick and thin films. Total W. B. C. count 12,600/cmm. with differential count of poly 90 per cent; lympho 5 per cent; mono 2 per cent and eosino 3 per cent. Blood urea was 40 mg. per cent.

Fundus oculi showed only engorgement of the veins.

Treatment—BAL was given one ampoule* every 4 hours intramuscularly for first twenty-four hours, then two injections morning and evening for another four days. Crystalline penicillin "G"—50 thousand units I.M. was given every four hours. Alkaline mixture was given thrice daily one ounce each time. Oxygen inhalation through B.L.B. mask to combat cyanosis. Intragastric milk drip—3 pints daily.

The patient came back to consciousness within 24 hours of the treatment, pupils began their reaction to light. Reflexes returned to normal. He developed one mental complication of partial amnesia of recent events and tried to confabulate ideas. But this also passed away in a fortnight. He developed during and after the treatment tingling, numbness in upper and lower extremities which was successfully treated with thiamine hydrochloride in heavy dosage.

Case 2—Patient, a Hindu male, railway officer, 40 years of age, was having recurrent joint pains with symmetrical swelling of metacarpal and interphalangeal joints and knee joints. He was diagnosed as a case of rheumatoid arthritis by a railway assistant surgeon who recommended him a course of intramuscular gold injection (Myocrysin) along with salicylate therapy and local application of heat. After first two injections there was no reaction, but he had a feeling of sickness. With the third injection he became fully unconscious within a few hours of the injection.

On admission to the hospital the patient was found to be a hefty obese person. Pulse was 120 per minute with volume and tension good; respiration was 30 per minute; blood pressure was 130/30 mm. Hg. Pupils did not react to light. There was no neck rigidity and the Kernig's sign was negative. Reflexes, e.g., ankle and knee jerks were present; Superficial plantar response on the right side was indefinite and on the left side positive (extensor). The liver and the spleen were not palpable; heart showed a faint systolic murmur at the apex.

INVESTIGATIONS: Blood examined revealed no malarial parasite on thick and thin films; total count of W.B.C. was 9,950 per c.mm.; differential count was poly 80 per cent; lympho 18 per cent; mono 2 per cent; eosino and basophils nil.

Catheter specimen of urine showed no abnormality.

C.S.F.—Colourless, not under pressure; cells 180 per cmm.; all neutrophils; protein, 263·5 mg. per cent; sugar 60·9 mg. per cent; chlorides 800 mg. per cent.

Fundus oculi normal.

TREATMENT: BAL was given, 1 ampoule every 4 hours for the first two days, then 1 ampoule morning and evening for another two days. Paraldehyde 2 drachms was given orally through intragastric drip. 3 pints of milk were given daily in intragastric drip feeds.

The patient recovered from unconsciousness within 24 hours after administration of BAL although he remained dazed for a few days.

Case 3—B. V., Hindu male child, aged 10 years, admitted on 12-9-51 for unconsciousness and convulsions. History of illness revealed that child had snuffles and pain in bones and ulceration of the tongue. He was diagnosed clinically as a case of congenital syphilis which was confirmed serologically by W. R. test and also by x-ray which showed evidence of periostitis. There was no previous history of epileptic fits. Antisyphilitic treatment was started with oral use of iodide and injections of arsenic (acetylarson given intramuscularly). Acetylarson was given at 5 days interval. He did not reveal any toxic reaction after first two injections, but after the third injection he had vomiting, a sense of constriction round the chest and started getting epileptiform fits. These persisted for a few hours till the child became unconscious when he was brought to the hospital.

On examination the child was found well-built, not much dehydrated, facies did not reveal any peculiar feature, the tongue was coated and showed a big ulcer on the dorsum. Pulse was 110 per minute, regular and of good volume and tension; respiration was 20 per minute; blood pressure was 105/70 mm. Hg. and the temperature 102°F.

There was thickening of both the tibia; no glands were palpable; pupils were slightly dilated, not reacting to light and accommodation; there was rigidity in the neck; knee and ankle jerks were brisk on both sides. Superficial plantar response was extensor on both sides. The liver and the spleen were not palpable. Chest revealed vesicular breath sounds with moist rales at the bases. Heart showed no abnormality.

INVESTIGATIONS: C.S.F. was colourless with a rate of 100 drops per minute; protein 102 mg. per cent; sugar 60 mg. per cent; chlorides 670 mg. per cent; cells—240 per cmm., mostly lymphocytes—a few were neutrophils.

Fundus oculi showed engorgement of the veins and haziness of the disc but no exudates.

Blood examination—No malaria parasites could be found. Total W.B.C. was 7,500 per c.mm. with differential count of poly 90 per cent; lympho 10 per cent; mono and eosino nil. W. R. was positive.

Catheter specimen of urine showed no abnormality.

Stool examination also did not reveal any abnormality.

Treatment—Lumbar puncture was done daily to relieve the intracranial pressure. BAL ½ ampoule was given intramuscularly every 4 hours. Paraldehyde 3 c.c. was injected intramuscularly morning and evening. Alkaline mixture was given thrice daily half an ounce each time. Penicillin was injected I.M. 30,000 units every 4 hours. Intragastric fluid, normal saline and milk about 2 pints a day.

The child did not show any progress even with the institution of BAL therapy. He developed next day pulmonary edema and ultimately died in the afternoon. Relatives refused postmortem in this case.

Case 4—The patient, a Hindu female of 24 years, was admitted into the hospital in an unconscious state. Past

* 2 c.c. ampoules containing 0·1 g. of dimercaptopropanol in arachis oil.

history revealed that she was suffering from tropical eosinophilia of the lungs and was administered intramuscular injection of acetylarson. She became unconscious within a few hours of administration of the third injection of 2 c.c. acetylarson.

On examination the patient was found to be unconscious, pulse was 130 per minute, regular and of good volume; respiration was 30 per minute and there was slight cyanosis. The temperature was 104°F. There was neck rigidity. The pupils were slightly dilated and not reacting to light. The heart showed no abnormality and the lungs no signs of congestion. The spleen and liver were not palpable.

INVESTIGATIONS: Blood—No. M. P. found in thick or thin films. Total W.B.C.—10,250 per c.mm. with neutrophils 15 per cent, lympho 13 per cent, mono 2 per cent and eosino 70 per cent.

Catheter specimen of urine showed only a trace of albumin.

C. S. F.—Colourless, not under pressure, protein 250 mg. per cent; sugar 40 mg. per cent; chloride 680 mg. per cent; cells—200 per c.mm., mostly mononuclears.

Treatment—BAL was given one ampoule every 4 hours intramuscularly for first 48 hours, then morning and evening for another 4 days. Glucose 50 c.c. 25 per cent was administered intravenously with vitamin C 100 mg. daily. Alkaline mixture was given thrice daily one ounce each time. Coramine one ampoule given I.M. every 4 hours.

The patient regained consciousness within 24 hours of administration of BAL and made an uneventful recovery.

DISCUSSION

The diagnosis of encephalopathy was established from history and clinical findings of the cases. Laboratory investigations were carried out to exclude other clinical possibilities. All the cases under observation were treated with (1) full dosages of BAL; (2) sedatives in the form of paraldehyde, phenobarbitone to check convulsions; (3) fluids intravenously and by intragastric drip to combat dehydration and (4) parenteral penicillin in cases where there was secondary pneumonia.

The dosage of BAL (2, 3-dimercaptopropanol) was used as recommended by American Council of Chemistry and Pharmacy (1947) i.e. 3 mg. per kg. of body weight given every four hours for first 48 hours, then twice daily till complete recovery occurred. Out of four cases under observation recovery occurred in three cases within twenty-four hours of the institution of the treatment. The third case reported i.e. the child, died. It has been emphasised that successful treatment of arsenic, gold and mercury poisoning with BAL therapy depends on the institution of treatment at the earliest possible moment before irreparable tissue damage has occurred.

Tye *et al* (1947) and Sultzburger *et al* (1946) reported a number of toxic reactions with BAL therapy i.e. flushing of the face; burning sensation of the gums, nose and skin; profuse lachrymation; abdominal cramps; tingling of the extremities; feeling of constriction round the chest. Rare findings were noted as elevation of systolic and diastolic blood pressure and local abscess formation at the site of injection. We are, however, fortunate in the present series not to have any serious toxic symptoms. A few observed were weakness, nausea, tingling, numbness of extremities with loss of reflexes and subjective loss of sensation. They were successfully treated with adequate amount of parenteral injection of thiamine hydrochloride. A very peculiar feature was observed in one of the cases in the present series. The patient developed Korsakoff's psychosis with amnesia of recent events and full remembrance of distant events. This however, passed off in a fortnight.

SUMMARY

(1) Four cases of encephalopathy after arsenic and gold injection treated with BAL (2, 3-dimercaptopropanol) have been described.

(2) Only one death occurred out of 4 cases treated.

(3) Toxic symptoms after BAL therapy have been described.

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TSUTSUGAMUSHI DISEASE (SCRUB TYPHUS) IN BOMBAY CITY AND SUBURBS

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Tsutsugamushi is an infectious disease caused by *Rickettsia orientalis* and characterized by sudden onset, fever of about two weeks' duration and a cutaneous rash, which appears approximately on the fifth day. The disease is transmitted by certain mites and an eschar usually develops at the site of attachment. Formerly, it was usual to call such fevers, associated

with local eschar, tsutsugamushi disease and those without such an eschar, scrub typhus, but the work of Lewthwaite and Savoor (1936) in Malaya has conclusively established that both types are manifestations of the same disease. Differentiation of this disease from other typhus fevers is usually made by agglutination test using proteus OXK suspensions. It may me mentioned in passing that the discovery of the strain, *Bacillus proteus K* by Kingsbury in Malaya represents one of the most extraordinary accidents in the history of medical research. After a visit to England, Kingsbury took back to Kuala Lumpur, a reputed strain of proteus X19. Specimens of sera from some patients with typhus fever in Malaya had been failing to agglutinate the strain of proteus X19 in current use and were tested against Kingsbury strain. They agglutinated them well and soon it became clear that in Malaya there were two types of typhus fevers—the socalled urban or X19 type and the rural or the OXK type. It appears even to this day that no one knows how the strain labelled X19 in London became the extraordinarily useful but antigenically quite distinct strain OXK in Malaya.

Thus following the adoption of this diagnostic technique, reports began to appear in India of scattered cases of a typhus-like disease. These were recorded first from Simla Hills (Macnamara, 1935) and shortly thereafter from Lahore, Meerut, Bengal, Assam, and Deccan (Boyd, 1935). Confirmation of the presence of OXK positive typhus in Simla Hills was shortly provided (Bush, 1936 and Covell, 1936) and it was noted that in this region, the disease occurred as sporadic cases of focal outbreaks in rural or semi-rural areas, appearing especially immediately after the rainy season during August, September and October. Positive serological reaction were also recorded from various parts of Assam (Woodhead and Datta, 1941) and from Bombay and Madras Presidencies (Patel, 1943 and Annual Report King Institute, 1938). A glance at the map of India, having the distribution of typhus fevers based on W. F. reaction, clearly showed that Tsutsugamushi disease was present in India at the time but it was not of great epidemiological significance. But during the World War II, with its spread to the middle-east, this disease assumed great military importance especially on the Burma-Assam border and thus it came to be thoroughly studied not only serologically but on its aetiological and epidemiological basis.

In Bombay City and around, before the war, no serological data existed. Patel (1940) reported two cases on clinical grounds but the W.F. OXK titres were too low to be significant. Patel (1943) reported two more cases with good serological evidence. Hardly any W.F. tests were carried out at the Haffkine Institute at the time. Since 1944, however, it was decided to test all sera from pyrexial cases routinely along with the Widal tests. This procedure has been maintained since that year to this day and it has brought to light at least the presence of two types of typhus fevers in Bombay, the OX19 type and the OXK type. The total number of W.F. tests carried out year by year and the number of positive sera found year by year during the last eight years, are summarised in Tables 1 and 2.

TABLE 1—SAMPLES OF SERA TESTED YEAR BY YEAR

Year	*No. of sera tested*	*Total W.F.*	*OX19*	*OX2*	*OXK*
1945	1566	112	100	2	10
1946	1561	93	74	4	15
1947	1649	79	68	0	11
1948	2248	100	93	0	7
1949	2810	101	79	4	18
1950	2796	137	111	6	20
1951	4206	204	192	4	8
1952	3142	60	59	0	1
	19958	886	776	20	90
		4·4%	87·5%	2·2%	10·1%

TABLE 2—ISOLATION OF *R. orientalis* FROM HUMAN CASES YEAR TO YEAR

Year	*No. of cases*	*No. of strains isolated*
1945	10	1 (Savoor)
1946	15	8 (Soman)
1947	11	1 ,,
1948	7	5 ,,
1949	18	6 ,,
1950	20	1 ,,
1951	8	0 ,,
1952	1	0 ,,
	90	22

Since at this Institute, the work of isolation of strains began in 1945 and at the end of that year, Savoor (1947) was able to isolate a strain of *R. orientalis* in mice, Soman (1948) could easily isolate eight strains out of his fifteen serologically positive cases of XK typhus in 1946, and since then almost every year, these strains have been isolated, in spite of the very small fraction of the number of cases serologically positive. Besides Soman (1948) established that Tsutsugamushi disease occurred within the city limits and naturally its presence in a metropolitan city of Bombay was, therefore of more than ordinary interest. Table 2 illustrates the number of Tsutsugamushi disease in Bombay and suburbs year by year and diagnosed serologically and by isolation procedures.

CLINICAL FEATURES

It is quite needless to go into clinical details of all the cases but the salient features as a whole could only be emphasised. Table 3 showing important clinical features in twenty-one cases, proved by isolation of causal rickettsia, illustrates the points.

Majority of these cases were mild and resembled enteric infections on clinical grounds. Their blood cultures and Widal reactions were repeatedly negative.

TABLE 3—POSITIVE ISOLATIONS YEAR BY YEAR WITH CLINICAL HISTORY AND WEIL-FELIX RESULTS

Serial No. and Widal No.	*Month and Year*	*Locality*	*Sex and Age*	*Eschar*	*Rash*	*OXK titre and day of fever*	*Mice inoculations*	*Remarks*
1 (1106)	Sept. 1946	Bombay	F. 19	–	–	2500 (21)* 2500 (28) 500 (37) 250 (50)	*R. orientalis*	
2 (1193)	Oct. 1946	Bombay	M. 10	+	–	500 (13)* 1250 (14) 500 (22)	*R. orientalis*	
3 (1236)	Oct. 1946	Bombay	F. 20	–	–	250 (18) 1250 (22)*	*R. orientalis*	
4 (1250)	Oct. 1946	Bombay	M. 26	+	+	1250 (12) 2500 (13) 1250 (19)* 1250 (27)	*R. orientalis*	
5 (1267)	Oct. 1946	Bombay	M. 30	–	–	125 (16)* 50 (27)	*R. orientalis*	
6 (1307)	Oct. 1946	Bombay	M. 144	N.K.	N.K.	250 (13)* 1250 (27)	*R. orientalis*	
7 (1325)	Oct. 1946	Bombay	F. 63	–	+	500 (12)*	*R. orientalis*	Died
8 (1387)	Nov. 1946	Bombay	M. 45	–	+	250 (13)* 50 (22)	*R. orientalis*	
9 (993) (1003) (1043)	Aug. 1947	Bandra	F. 25	–	+	400 (12)* 400 (14) 1600 (28)	*R. orientalis*	
10 (1129) (1199)	Aug. 1948	Bandra	M. 45	–	–	400 (10)* 200 (12)	*R. orientalis* 2nd passage	
11 (1235) (1665)	Sept. 1948	Malad	M. 12	+	+	50 (16)* 150 (65)	*R. orientalis* 4th passage	
12 (1587) (1679)	Oct. 1948	Khar	F. 30	–	–	100 (17)* 400 (30)	*R. orientalis* 1st passage	
13 (1651) (1747)	Oct. 1948	Bandra	M. 48	–	–	100 (14)* 200 (22)	*R. orientalis* 2nd passage	
14 (1670)	Oct. 1948	Ghatkopar	M. 32	–	–	100 (10)*	*R. orientalis* 2nd passage	
15 (2400)	Nov. 1949	Matunga	F. 50	–	–	200 (14)*	*R. orientalis* 1st passage	
16 (2464)	Nov. 1949	Goregaon	M. 12	–	–	100 (10)*	*R. orientalis* 1st passage	Died
17 (2490)	Nov. 1949	...	F.	...	N.K.	600*	*R. orientalis* 7th passage	
18 (2464)	Dec. 1949	Andheri	M. 60	–	+	400 (17)*	*R. orientalis* 1st passage	Died
19 (2733)	Dec. 1949	Matunga	M.	...	–	200 (19)*	*R. orientalis* 5th passage	
20 (2781)	Jan. 1950	Girgaum	M.	–	–	400 (35)*	*R. orientalis* 5th passage	
21 (2269)	Nov. 1950	Jogeshwari	M. 22	–	–	100 (8)* 200 (13) 100 (22)	*R. orientalis* 4th passage	

Key: – = Absent. + = Present. N.K. = Not known. * = The day mice were inoculated and strain isolated.

In severe cases, out of which three died, evidence of mental disturbance such as drowsiness, insomnia and delirium was present, even during early convalescence, which was prolonged. In all cases, marked headache and severe prostration was a characteristic feature.

A history of macular or maculopapular rash was obtainable in six cases out of nineteen. The rash usually appeared first on trunk and face and later extended to extremities. Occasionally the rash was erythematous in type. Presence of rash, therefore, is not at all characteristic of every case.

A primary dermal lesion—the eschar—so pathognomonic of the disease was not always present. In 13 cases when it was particularly looked for, it was present in 3 cases only. Proximal lymph glands draining the area were enlarged in all three cases. The frequency with which it is found varies from 60-100 per cent in different series of cases reported in literature but experience of other workers has shown that it may be overlooked unless properly scrutinised. Many of the patients showed bronchial symptoms with dry cough. Only three cases proved fatal out of 21, with bronchopneumonia as chief complication.

Laboratory Findings

Weil-Felix tests carried out showed presence of agglutinins only against *B. proteus* XK. In 7 cases out of 21, OXK titres were significantly high and caused no difficulty in diagnosis but in 4 cases they were actually below the diagnostic level and only the animal inoculation test clinched the diagnosis. In 10 cases, the titres recorded were not higher than 1 in 500 and remained low. These are some of the low-titre type of cases, so frequently observed and referred to by Felix (1914) of endemic typhus and referred to by Soman (1947). As could be observed from Table 3 the height of titres obtained in these cases did not bear any constant relation to the day of disease. Sometimes they shot up in one day.

Significant titres against *B. proteus* XK strain have been reported in relapsing fever by Robinson (1942), Elsdon-Dew (1943) and Zaraphonetis and others (1946) and Savoor and Lewthwaite (1946) which require to be excluded from the diagnosis of scrub typhus. Their exclusion should not be too difficult.

Isolation of rickettsial strains—Guineapigs or mice could be used as experimental animals but the white mouse is the animal of choice. The disease is often fatal for both types of animals, between 10th and 20th day.

Majority of strains of *R. orientalis* could be recovered with the first inoculation in mice but there were quite a number (Table 3) which required 2 to 7 passages in mice each time. The usual story was that in the earlier passages the mice appeared sick but on sacrificing, no rickettsial organisms were seen in spite of the slight exudate containing large number of vacuolated cells. It should be remembered, however, that early attempts to transmit the disease serially in laboratory animals repeatedly gave negative results in the hands of many investigators. Japanese workers had to use intraocular and intratesticular routes for infection (Ishiwara and Ogata, 1928 and Nagayo *et al* 1931). Lewthwaite and Savoor (1936), after many trials, had to use guineapig with vitamin deficient diet to reproduce the infection but the disease in New Guinea and adjacent area and even in Bombay was easily reproduced in animals (Blake *et al*, 1945 and Soman, 1947). Still the evidence points out that certain strains have feeble pathogenicity for animals. Final identification of these strains is made by cross-immunity and other immunological studies. *R. orientalis* has been grown in fertile eggs but rather poorly as compared with other pathogenic rickettsial strains.

Epidemiology

The occurrence of Tsutsugamushi disease in Bombay is of more than ordinary interest. In the literature, all the cases hitherto recorded in areas principally outside India had been from marshy areas bordering on the jungle, plantations of sugar, and of cocoanut and oilpalm, from open grassy terrain and from camping sites, on the banks of inundated rivers, in general, exclusively from rural as opposed to urban areas. The question would be how the epidemiological data be consistent with the occurrence in a metropolitan area of scrub typhus which has hitherto been considered a disease exclusively of the countryside!

Epidemiological and field observations carried out in Japan, Malaya and Indonesia, where the disease has been studied over a period of many years have revealed the following data:

(1) the virus of tsutsugamushi had been recovered from many wild rodents; (2) certain jungle birds species, known to harbour *Trombicula deliensis*, have been incriminated in the spread of the disease; (3) the larval forms of a few species of Trombiculae are the vectors concerned in the transmission of the disease. Scrub typhus is really a good example of human disease in which man merely blunders into a biological system, with which he is not essentially concerned

The rodent is presumably the reservoir but its principal role may be no more than spreading scrub typhus from an endemic to a non-endemic area. The migratory habits of the rats probably account for such an extension. But in the absence of the vector, an infected reservoir is of little danger to man.

A number of attempts were made to isolate strains of *R. orientalis* from the rodents in Bombay. These efforts were not particularly directed to those rats that were caught in the area where scrub typhus cases occurred but they were only random attempts at isolation from rodents caught all over the city area and sent to the Institute for evidence of plague infection. As such no strains could be isolated from any of these rodents in Bombay, although a few strains of *R. orien-*

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talis have been isolated from rats and field mice in different parts of India (Kalra, 1949) and Krishnan, *et al* (1949).

Approximately 2000 rats are trapped all over the city of Bombay and are sent to the Institute every day for evidence of plague infection. On identification, they belonged to the following species:

Rattus ratttus 19·6 per cent, *Rattus norvegicus* 23·7 per cent, *Gunomys kok* 49 per cent, *Suncus caeruleus* 3·5 per cent, *Bandicoota malabarica* 1·7 per cent and *Mus dubius* 2·5 per cent. The first three of these species consisted nearly 92 per cent of the trapped number which were chiefly used in the identification and investigation. The rats were anaesthetised lightly to collect any ectoparasites such as fleas, ticks and mites. Hardly any ticks were found; very few fleas were collected and were mostly *X. cheopis*. Trombiculid mites were collected in good numbers, half of which were stored for identification and the other half of the pool of 60-80 were used for inoculation into mice with a view to isolate strains. On their animal hosts, larval mites were found attached, in closely packed orange coloured clusters, numbering upto 200 more individuals in each. The colonies were usually situated in the concha of the ears, on the ear margins and rarely in the region of the genitalia. Only three species namely *Tr. euschongastia indica* (Hirst), *Tr. indica* and *Tr. paltai* have been identified, which were also confirmed by Dr. Muesebeck, Chief of the Bureau of Insect Identification, Department of Agriculture, Washington.

Tables 4 and 5 show the number of rats examined for larval mites and the number of mites collected during the years 1947 and 1948.

TABLE 4

(1) Total number of rats examined	...	1442
Number of rats found infested	...	192
No. of mites collected	...	3302
(2) Percentage of different species of rats showing infestation:		
Gunomys kok	...	25·2%
Rattus rattus	...	4·7%
Rattus norvegicus	...	13·7%
(3) No. of mites per species of individual rat:		
Gunomys kok	...	15·5%
Rattus rattus	...	10%
Rattus norvegicus	...	25·3%

No mite strain could be isolated in spite of these sixteen attempts.

The failure to isolate a strain could be accounted for easily because it was a search from the random population of rats, with no relation to the area where XK typhus cases occurred and secondly, perhaps the real incriminating species *Trombiculae deliensis* was very sparely present or altogether new species would be responsible, is difficult to say. In Calcutta, it was invariably the *Rattus rattus* and *Trombicula deliensis* that were concerned in the maintenance of infection under natural conditions (Krishnan *et al*, 1949).

TABLE 5

Serial No.	*Collected in month and year*		*No. of mites in a pool*	*Species of rat for which collected*	*Isolation of richettsia*
1	Feb.	1947	35	G. kok	Negative
2	,,	,,	50-60	,,	,,
3	,,	,,	60	,,	,,
4	Aug.	,,	120	R. norvegicus	,,
5	,,	,,	120	,,	,,
6	Sept.	,,	100	,,	,,
7	Jan.	1948	45	G. kok	,,
8	,,	,,	60	R. norvegicus	,,
9	Feb.	,,	60	,,	,,
10	July	,,	50	,,	,,
11	,,	,,	40	R. rattus	,,
12	Oct.	1949	75	R. norvegicus	,,
13	,,	,,	150	,,	,,
14	,,	,,	200	,,	,,
15	Nov.	1949	150	R. rattus	,,
16	,,	,,	120	,,	,,

A reference to Table 1 shows that the number of samples examined for W.F. in 1951 was much greater than that in any other years; this sudden increase was due to samples received from the Arthur Road Hospital for Widal and Weil-Felix tests from continued pyrexia cases. In spite of this large number examined during that year, only 8 samples were positive for OXK and only one during 1952. This downward trend in the incidence in the city is probably due to improved sanitary conditions, such as rat eradication campaigns, widespread use of DDT and above all the advent of chloromycetin in the treatment of cases of enteric fevers or pyrexias simulating them. The use of chloromycetin in the very early stages of continued pyrexia, whether due to enteric fever or typhus group of fevers, would naturally interfere with the serological diagnosis of such fevers. This frontal attack by way of specific antibiotic therapy and sanitary measures in the city has, to a great extent, contributed to the diminished incidence of typhus fevers and perhaps to their fast disappearance in years to come.

SUMMARY

(1) During the past 8 years, 19,958 blood sera were tested for W.F. reaction. 886 (4·4 per cent) of sera reacted to the common proteus antigens in the diagnosis of typhus fever, 87·5 per cent of the positive sera reacted to proteus X19 antigen and 10 per cent to proteus OXK antigen.

(2) 22 human strains of *R. orientalis* were isolated in mice. No strain could be isolated from rodents or mites.

(3) The incidence of Tsutsugamushi disease as observed during recent years is fast declining not only due to improved sanitary measures in the city but also to the prompt use of chloromycetin in the treatment of such fevers.

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HAEMOPTYSIS IN PULMONARY TUBERCULOSIS

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Among the symptoms of pulmonary tuberculosis, haemoptysis stands prominent not only as an early symptom but also as a complication which may give rise to serious consequences. Hæmoptysis occurs in about one third of all cases of pulmonary tuberculosis and it may appear at any stage during the course of the disease.

When hæmoptysis occurs in an apparently healthy individual, even if it happens to be very slight, it requires proper investigation as haemoptysis may occur not only in pulmonary tuberculosis but in other conditions too. The commonest cause of haemoptysis is pulmonary tuberculosis. Hence utmost caution should be exercised before thinking of other conditions. The other common conditions that may also give rise to haemoptysis, in the order of frequency, are bronchiaectasis, pneumonia, abscess of the lung, mitral stenosis, hypertension, cirrhosis of the liver, malignancy, blood dyscrasias and occasionally eosinophilic lung.

Hæmoptysis occurs as an initial symptom in about 5 to 10 per cent. of all cases of pulmonary tuberculosis. If it happens to be an initial hæmorrhage, it is never fatal, never profuse and not much harmful. On the other hand, it should not be looked upon as an unfortunate occurrence because it draws the attention of the individual to the real condition of his lungs which he would have neglected otherwise.

If hæmoptysis occurs during the course of the disease, it may develop at any period of the disease and the amount of blood expectorated may vary from a sudden massive outpouring to small streaks of blood or a mere staining of the sputum. It may continue for several days or may recur at intervals. If the hæmorrhage happens to be profuse, death may occur with a short period either from asphyxia or syncope. Fortunately, such rapidly fatal hæmorrhages are rare, whereas in a large majority of cases haemoptysis is not an immediate cause of death. However, it may give rise to serious consequences such as atelectasis of one lobe or another due to blocking of bronchial tubes by blood clot, spread of disease to the same side or to the opposite side due to aspiration of the infected blood, miliary or meningeal tuberculosis due to hæmatological spread or it may eventually lead to exsanguination, if the bleeding is allowed to continue. The temperature usually goes up during the period of hæmoptysis and it may keep up for a varying length of time till the spread of the disease is stabilised or controlled.

PECULIARITIES

Hæmoptysis in pulmonary tuberculosis has got some peculiarities:

(*i*) Hæmoptysis may start at any time of the day or night but it has been observed more frequently in the early hours of the morning.

(*ii*) After the actual bleeding has stopped, the sputum may be blood stained for some days owing to the expectoration of blood inhaled into the other parts of the lungs.

(*iii*) Once hæmoptysis occurs tendency for further hæmoptysis is common.

(*iv*) Tendency for hæmoptysis is greater during the very hot and very cold months of the year.

SOURCE

The source of haemorrhage in pulmonary tuberculosis is as under:

(*i*) Rupture of an aneurysmal dilatation of a branch of pulmonary artery which may be lying in a tuberculous cavity. The cause of such aneurysm may be due to three factors, namely, loss of support given by the lung tissue, weakening of the walls of the blood vessel by tuberculous process and increased intrapul-

monary arterial pressure as usually happens when the patient coughs or sneezes.

(*ii*) Involvement of small arterial branch by tuberculous granulation tissue causing erosion.

(*iii*) Tuberculous ulcerations in the bronchi eroding branches of the bronchial arteries.

(*iv*) Rapid liquefaction of the tuberculous lesion may also involve he blood vessels and destroy the vascular wall.

(*v*) Rupture of small capillary vessels in ulcerative areas.

(*vi*) Bleeding from capillaries during the process of healing.

(*vii*) Perifocal hæmorrhage i.e. congestive process around the early lesion causing diapedesis. Initial hæmoptysis of pulmonary tuberculosis may be due to such perifocal hæmorrhage.

Exciting Factors

The exciting factors in producing haemoptysis are:

(*i*) Hæmorrhagic diathesis.

(*ii*) Emotional state of the patient.

(*iii*) Superimposed secondary infection like influenza and pneumonia.

(*iv*) Exposure to U. V. rays or certain drugs like iodides.

(*v*) Occasionally streptomycin is observed to be the exciting cause in producing haemoptysis. Here it may due to the production of thrombocytopenic purpura or some sort of blood dyscrasia.

Management

In cases of very slight bleeding in which the sputum is only streaked with blood no special treatment is required except rest in bed for a few days till the staining of the sputum ceases. On the other hand, when there is frank or brisk hæmoptysis, more active measures are called for. Mechanics of pulmonary vascular tree are such that there is a natural tendency for pulmonary haemorrhage to cease spontaneously. A programme of bed rest, controlled diet, a mild sedative and reassurance to the patient is all that is required in very many cases.

Bed rest—The patient should be confined to bed in a posture that is convenient to the patient, preferably in a semirecumbent position with a back rest or a couple of pillows so that it may be easy for the patient to breathe with comfort and to cough and spit without much exertion.

Mental rest—Visitors should not be allowed except one or two close relations. Care must be taken to see that these people are not fussy and no excitement is created in the presence of the patient. As the patient is usually nervous and frightened, the attending physician must assure him that nothing bad is going to happen and the bleeding will stop without doing much harm to the patient. He must visit him frequently as the presence of the doctor has a very great influence on the mental condition of the patient.

Diet—The food must be bland, non-stimulating and cold. There is no harm in giving iced food. Beverages like coffee and tea should be avoided. Alcohol should not be given. If there is a brisk hæmoptysis, it is better to restrict the diet for a day or two and give only sips of cold or iced liquid food.

Bowels—Bowels must be kept open either by enema or by small dose of aperients.

Drugs—Numerous drugs have been tried and are still being tried with the fond hope of stopping the hæmoptysis but it is extremely difficult to form any dogmatic opinion as to the exact value of these drugs. Some thing has to be done in an emergency and sometimes some of these drugs may really succeed in stopping the hæmoptysis.

Morphine: It is a common practice to prescribe morphine in each and every case of hæmoptysis. Administration of morphine should not be regarded as a routine and its use should be given up as far as possible. No doubt, morphine gives a temporary benefit but it later produces several ill effects. Morphine has the danger of depressing the cough reflex unduly, with the result that it tends to cause stagnation of blood in the respiratory passages. When the effect of morphine passes off, the stagnated blood which is a source of irritation sets up more cough which in turn produces more bleeding. Also there is a greater tendency for aspiration spread due to stagnation of blood in the air passages. In addition there is a possibility of occurrence of massive collapse by blockage of the bronchial tubes with clotted blood.

If the patient is restless and evidently alarmed, a small dose of omnopon (1/6 grain) may be given to allay nervousness but not enough to depress the cough reflex. It should not be repeated as far as possible. Omnopon is less depressant to the respiratory centre than morphine.

If the cough is troublesome or if a sedative action is desired, syrup codeine 1 drachm or tincture opii camphorata half a drachm in an ounce of water may be given. It can be repeated if and when required.

Calcium, Coagulen and Vitamin K: These are the safest drugs that are frequently used in combination. Administration of calcium gluconate 10 per cent 10 c.c. intravenously and coagulen (Ciba) 10 c.c. together with vitamin K 10 mg. in 1 c.c. intramuscularly appears to be really useful sometimes. If necessary the combination may be repeated the next day. It is said that patients with a tendency to hæmoptysis usually have prothrombin deficiency and vitamin K regulates the prothrombin deficiency if it is there. There is no satisfactory evidence to show that deficiency of calcium in the blood is in any way responsible

for hæmoptysis but sometimes administration of calcium has been followed by cessation of bleeding. If the patient is having troublesome cough it is advisable to give calcium gluconate very very slowly or to reduce the strength to 5 per cent in order that he may not burst into a fit of cough immediately after giving the injection. Coagulen (Ciba) is an aqueous solution of blood platelets prepared from bovine sources. It may be helpful sometimes in hastening the formation of clot at the bleeding point. Frequently it is found to be useful in capillary bleeding.

Pituitrin: Intravenous pituitrin has been tried in recent years with beneficial effect. 1 c.c. of pituitrin containing 10 I.U. is diluted with 50 c.c. of normal saline and is given slowly drop by drop by intravenous route taking about 10 to 15 minutes. Shortly after commencement of the injection the patient may become intensely pale and may complain of dizziness. This may be followed by slight abdominal cramping pain and an urge to empty the bowels and the bladder. There is nothing to be afraid of. These effects are only transitory and disappear rapidly. The response seems to be immediate. Usually one injection is sufficient. If necessary it may be repeated the next day. It is really worth trying in cases with massive hæmoptysis. The author has tried intravenous pituitrin recently in one intractable case of haemoptysis with immediate cessation of bleeding.

Congo Red: 10 c.c. of freshly prepared 1 per cent solution of congo red intravenously has been claimed to be effective in inducing thrombosis in the vessels of the bleeding area. I do not advise the use of congo red as it sometimes gives rise to severs systemic reactions and even deaths have been reported after intravenous administration of congo red.

Emetine: Half a grain intramuscularly twice a day has been used empirically by some and it appears to be effective in checking haemoptysis. However, its value is questionable. Emetine being a powerful heart depressant is not worth a trial in a case of pulmonary tuberculosis where there is already a low blood pressure.

Amyl Nitrite: Inhalation of amyl nitrite has been suggested by some. I feel it is contraindicated in hæmoptysis as it tends to increase the intrapulmonary vascular pressure.

Ergot: Maurice Davidson says sudden and dramatic cessation of hæmoptysis occurs after administration of 1 or 2 drachms of liquid extract of ergot in an ounce of water by mouth. I have tried this in two cases with no appreciable effect.

If hæmoptysis occurs during the course of streptomycin treatment, stop the streptomycin till the hæmoptysis ceases.

Collapse Therapy: In cases of haemoptysis do not jump to the collapse therapy at once, if you can avoid it. On the other hand, if the hæmorrhage is still unchecked or is frequently repeated, collapse therapy may have to be used to control the bleeding. In cases in which the disease is predominantly unilateral, if it is definitely known that the bleeding is coming from that side and if it happens to be a suitable case, artificial pneumothorax may have a salutary effect in controlling hæmoptysis. There is no need to give a large quantity of air upto 1000 c.c. or 1500 c.c. as mentioned in the text books. 300 to 400 c.c. of air is quite sufficient and it can be safely repeated the next day if necessary. In cases where there is biliteral disease, in cases where it is not known from which side the bleeding is coming and in cases where artificial pneumothorax has failed for want of pleural space, pneumoperitoneum can be used as an emergency measure. It is also an equally effective measure and in several instances it has been helpful in controlling the hæmoptysis. The quantity of air that can be given at the initial pneumoperitoneum is about 500 c.c. and the same quantity of air may be given the next day without much discomfort to the patient.

Convalescence: During the convalescent period after hæmoptysis, we have to look at the case afresh to make sure whether the collapse therapy, if adopted during the emergency, has to be continued or not. If no collapse therapy was started during the period of hæmoptysis, review the case and see if there is any indication for the collapse therapy now.

If the temperature has not returned to normal, it is usually due to spread of disease. In such an event, we may have to put the patient on a short course of chemotherapy in order to control the spread of disease.

Haemopoiesis should be stimulated by using liver extract, folic acid, vitamin B12 and iron. Sometimes, if there was too much of bleeding, transfusion of 200 to 300 c.c. of blood may be helpful.

If the cough is still persisting, it should be controlled by means of necessary sedatives.

SPECIAL ARTICLE

THE USE OF BETA RAY IN OPHTHALMOLOGY*

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Beta radiation is a valuable therapeutic agent in some diseases of the anterior segment of the eye, which resist ordinary methods of treatment.

Beta particles, otherwise known as beta rays, are high speed electrons. In tissues, a beta particle of one million volt energy will have a penetration of about 4 mm.

No special therapeutic effect can be attributed to beta rays. Beneficial effect is due to ionisation of the

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tissues and this effect can be produced by x-rays or gamma rays. The advantage of beta rays is due to its low penetration; the deeper structures, specially the lens, are protected from harmful effect of radiation unless heavy doses are applied all round the limbus.

There are two types of applicators:—In one the source of beta rays is radon which emits 2 per cent gamma rays in addition. The surgeon and attendant have to be protected from the cumulative effects, so also the deeper tissues specially the lens.

In the second one, the source is from strontium 90. Strontium 90 particle disintegrates through the emission of beta particle with maximum energy of 0·65 million electron volts (mev.) to form yittrium 90, which emits beta particle with an energy of 2·16 mev. to form a stable isotope of zirconium.

SHORT DESCRIPTION OF THE APPLICATOR:

Active diameter is 7·8 mm.; outside diameter is 12·7 mm. Source is covered by 0·002 inch of stainless steel and 0·01 inch of aluminium and sealed by a double hermetic seal.

Source strength is 25 to 40 mc., which yields a surface dosage rate of 421 röntgen equivalent beta per sec. (Rep).

Shaft length is $6\frac{3}{4}$″

Protection shield 4″ × $\frac{1}{4}$″ circular plexiglass which slides on shaft.

ADVANTAGES:

Easily available, low cost, high beta ray output (40 to 100 Rep), pure beta and no gamma rays, average energy (slightly more than radon), and half life of 20 years. Cumulative effect of beta ray may be considerable. The output decreases about 2·7 per cent per year.

DISADVANTAGES:

Large size of active surface (7·8 mm.), uncertainty of evenness of Sr. 90. Applicator though supposed to have 20 years half life, some of them have shown apparent drop of Rep output of 33 per cent in one or two years.

INDICATIONS:

The indication means that this method of therapy is superior to any other therapy available at present.

TREATMENT OF CHOICE:

1. Epithelial tumour of the limbus and cornea.
2. Vernal conjunctivitis palpebral or bulbar form, associated with severe symptoms.
3. Vascularisation complicating keratotomy and keratoplasty.
4. Rosacea keratitis.
5. Primary vascularising reactions.
6. Recurrent pterygium after secondary excision).

FAVOURABLE RESULTS:

(a) Allergic and phlyctenular keratitis.
(b) Papillomas and hæmangiomas of conjunctiva.
(c) Nodular episcleritis.
(d) Granulation tissue.

UNCERTAIN RESULTS:

Stromal herpes simplex (low dosage).
Basal cell carcinoma of lid margins.
Chemical burns (not recent).
Tubercular sclerokeratitis.
Interstitial keratitis.
Trachoma, stage IV.
Salzman's dystrophy of cornea with vascularisation.
Lipidal dystrophy of cornea with vascularisation.
Old vascularised corneal scar.

NOT INDICATED:

Primary treatment of pterygium.
Fuch's endothelial and epithelial dystrophy.
Epithelial outgrowth into anterior chamber.
Acute chemical burns (burns).
Cicatricial conjunctival diseases.
Pinguecula.
Nævi.
Tumours of the lid margin.

COMPLICATION NOTED:

1. Irritability of the eye lasting for about 2 weeks, then clearing up.
2. Post irradiational vessels and telangiectasis, one to three years later.
3. Epilation of the lashes.
4. Deep corneal ulceration.
5. Epidermisation of conjunctiva.
6. Glaucoma.
7. Possibility of cataract formation.

DOSAGE:

All the treatment should be given by direct contact technique. Spray technique is inaccurate since the amount of radiation received by the tissues cannot be properly determined. Dosage varies from 1200 Rep. to 3000 Rep. and up to 6000 Rep. in some cases. These are given in divided doses at weekly intervals. High doses up to 14000 Rep. have been used in deep and recurrent vascularisation.

Superficial tumours—Small benign tumours specially papilloma of the lids and conjunctiva, epithelial tumours of the limbus and cornea respond very well. In early stage 300 r per week to a total of 1200 r is required. Angioma of the lids and conjunctiva of infants respond well to beta radiation, requiring one or two treatments, if treated early.

Pterygia—Primary pterygia should not be treated with beta ray. Recurrent pterygium after secondary

excision respond well—300 r weekly upto the total of 1200 r or more according to the amount of vascularisation.

Vernal conjunctivitis—Early cases respond very well. Long standing cases showing cobblestone appearance are resistant. These should be excised and beta radiation applied later on the area. Dose required is 1200 r to 3000 r. Limbal type responds very well and recurrences are very much decreased.

Vascularisation of cornea—Beta radiation is used both to prevent and obliterate the corneal blood vessels. It inhibits the proliferation of capillary endothelium in newly forming blood vessels. It is effectively used in keratotomy, superficial keratectomy, and corneal transplantation. 1200 r to 3000 r are quite sufficient. Larger and well established blood vessels require larger doses applied over the limbus. The irradiation produces obliterative arteritis resulting in occlusion of the blood vessels. Recurrent pterygium and vascularised corneal leucomas with symptoms of irritability respond very well.

Anterior segment tuberculosis—There is good response in 50 per cent cases. Recurrence is not decreased but irradiation seems to have beneficial effect on immediate attack.

METHOD OF APPLICATION:

Conjunctival sac is anæsthetised with ½ per cent Anethane drops 3 times at 3 minutes' interval. The patient should lie in the prone position. The surgeon stands either at the head of the table or at one side whichever is convenient for him. The lids are kept open with lid speculum. The surgeon's hand should be as far away from applicator as possible to protect it from scattered beta rays, since the cumulative effect of beta ray over a considerable period may be considerable. The applicator should be directly applied to the area to be treated and the time recorded by a stop watch.

If several patients are to be treated, for disinfection the applicator should be put in the auxiliary shield filled with seventy (70 per cent) alcohol, which should be wiped on a piece of gauze kept in a separate glass. When finished the applicator is dried with gauze and kept in the box.

CONTROL OF DOSAGE:

It will not be possible to send the applicator to the manufacturer every year. So the Rep. output can be judged by (a) skin erythema dose (b) minimal inflammatory dose (M.I.D.) on rabbit's cornea i.e. the dose required to produce a definite nebula (opacity) in rabbit's cornea, which will persist from 2 to 3 months.

As there are no rabbits, it is not possible to find out the M.I.D. which is 20,000 Rep. We have to depend on skin erythema dose, which is 1400 Rep. (Wilson and Wilson, 1952), though Wilson does not recommend it because of 3 factors:—"poorly defined end point, high incidence of individual variation and unreliability of a quantitative relation between the erythema response of human skin and clinical doses for the eye".

ACKNOWLEDGMENT

I take this opportunity to thank Mrs. Watumull of Wutumull Foundation of America for presenting a beta ray applicator (Sr90 y90, the source of beta ray being strontium 90) to be available to the patients of all eye surgeons in Calcutta.

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PUBLIC HEALTH

A SURVEY OF CARRIERS OF INTESTINAL PARASITES IN RAJASTHAN WITH SPECIAL REFERENCE TO ENTAMOEBA HISTOLYTICA

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The average carrier rate of *Entamoeba histolytica* as obtained from the few surveys that have been carried out in India is about 20 per cent (range 10-50 per cent). This work has rather been exhaustively done in the western countries and it is interesting to note that the incidence of *Ent. histolytica* carriers is not low in those temperate countries. Gnezdilov (1947), a Russian worker, puts the average global incidence of symptomless amoebiasis as 20 per cent. The present survey was considered necessary as no data regarding the incidence of intestinal parasites in the Rajasthan state were available and there is a belief that in a dry state like the Rajasthan the amoebic infection rate is low. In this communication the results of routine stool examinations in S.M.S. Medical College laboratory carried out for over three years are reported.

MATERIAL AND METHOD

Samples of stools obtained from 800 persons, 600 giving vague gastro-intestinal symptoms and 200 without such symptoms, were carefully examined. The latter, taken as controls, were selected from amongst patients admitted into the ophthalmological, orthopaedic and surgical wards and from the skin and venereal diseases department of the S. M. S. Hospital. A few medical students and staff of the college and hospital

were also included. None of them had complained of any gastro-intestinal trouble at the time of examination nor gave any history of frank dysentery during the past five years.

Both saline suspension and iodine preparations of the samples of stool passed naturally (without any purgative) were examined within 2 hours of collection. The iodine solution prepared with iodum 2 g., potassium iodide 4 g., water 100 ml. (Hoare, 1925-26) was found more convenient to use than the weaker solution of Dobell and O'Connor (1921). In case of negatives, 2 or 3 specimens were examined under high power lens 43× with 6X eye-piece) at the rate of nearly 400 fields per slide preparation. Only in doubtful cases of identification of *Ent. histolytica* cysts the oil immersion lens was used.

Results

The results are shown in Table 1.

Table 1

Parasite	*600 cases with vague gastrointestinal symptoms*		*200 cases without gastrointestinal symptoms*	
	NO. OF CASES	PERCENT POSITIVE	NO. OF CASES	PERCENT POSITIVE
Ent. histolytica				
vegetative	4	0·7	0	0·0
cyst	114	19·0	31	15·5
Ent. coli				
vegetative	10	1·7	1	0·5
cyst	104	17·3	35	17·5
Iod. butschlii				
cyst	40	6·6	10	5·0
Giardia lamblia				
vegetative	3	0·5	0	0·0
cyst	11	1·8	2	1·0
Trichomonas hominis	10	1·7	2	1·0
Chilomastix mesnili				
vegetative	4	0·7	2	1·0
cyst	3	0·5	1	0·5
Hookworm ova	8	1·3	2	1·0
Hymenolepis nana ova	6	1·0	0	0·0
Round worm ova	2	0·3	1	0·5
Blastocystis hominis	18	3·0	8	4·0
Cases with exudates	5	0·8	0	0·0
Positive for any abnormality	168	28·0	42	21·0

The incidence of *Ent. histolytica* passers among 600 persons showing vague gastro-intestinal symptoms and among 200 persons without gastro-intestinal symptoms is 19·7 and 15·5 per cent respectively. On examination of 100 negative cases by direct microscopic examination and $ZnSO_4$ levitation method of fresh samples obtained after purgative yielded five more positives, 3 by the first and 2 by the second method. The distributions of positive cases according to age and sex are given in Tables 2 and 3.

Table 2—Showing Age Distribution of *Ent. histolytica* Passers among 600 Persons giving Vague Gastro-intestinal Symptoms

Age groups (years)	*No. of persons*	*No. passing Ent. histolytica*	*Percentage*
0— 5	16	1	6·2
6—10	24	4	16·6
11—20	120	23	19·1
21—30	200	44	22·0
31—40	160	32	20·0
41—50	60	11	18·3
51—60	20	3	15·0
Total	600	118	19·7

As usual, the incidence of *Ent. histolytica* infection is much lower (6·2 per cent) in children below 5 years than in other groups (15·0 to 22 per cent). It is slightly higher among males than among females in both the groups with or without gastro-intestinal symptoms.

Discussion

The carrier rate of Entamoeba histolytica among the people in Rajasthan is 15·5 per cent which is fairly high, even though this estimate is actually on the low side because it is not possible to detect more than 50 per cent of the actual infection by examination of a single or several smears of a single specimen of stool. The estimated rate should be nearly 30 per cent. Thus this observation does not support the idea that *Ent. histolytica* is low in dry climate; similarly, observations during the World War I removed another wrong impression that amoebic infection or carriers were only confined to the tropical countries, because a fairly high percentage of indigenous population examined in the temperate countries was found infected with *Ent. histolytica*. However, acute amoebic dysentery and amoebic liver abscess are rare in cold countries like Great Britain, France, Germany and Austria. Most of the persons infected with *Ent. histolytica* are symptomless carriers and are so in Rajasthan.

Gnezdilov (1934), Sapero *et al* (1942) and Hoare (1945) postulated that *Ent. histolytica* is comprised of at least two races as judged by the size of the cyst. The smaller one with mean diameter of 7-8μ is believed to be non-pathogenic and the larger one with mean diameter 11-12μ originates from the pathogenic form. According to Sapero *et al* (1942) and Morton *et al* (1950) at least 50 per cent of the symptomless carriers in America and Great Britain pass only the small race of cysts.

The minimum carrier rate in the survey namely 6·2 per cent was in the age groups below 5 years but

TABLE 3—SHOWING SEX DISTRIBUTION OF *Ent. histolytica* PASSERS AMONG 600 PERSONS WITH VAGUE GASTRO-INTESTINAL SYMPTOMS AND 200 PERSONS WITHOUT SUCH SYMPTOMS

Observed groups	*Male* NO. EXAMINED	NO. +IVE	%	*Female* NO. EXAMINED	NO. +IVE	%	*Both sexes* %
Persons with vague gastro-intestinal symptoms	452	92	20·4	148	26	17·6	19·7
Persons without gastro-intestinal symptoms	157	26	16·5	43	5	11·6	15·5

this is also high compared to the finding of other workers in India. For instance, Gharpure and Saldanha (1931) analysed 426 postmortems of amoebic dysentery in the Indians and found only 0·9 per cent occurring below 10 years of age. Chaudhuri and Rai Chaudhuri (1946) analysing 796 cases of amoebic infection found 2·5 per cent in children below 5 years. The incidences of infection into the two sexes were not widely different contrary to the experience of Gharpure and Saldanha (*loc. cit.*) who found the incidence among males and females 90·6 per cent and 9·4 per cent respectively.

In a survey like this the importance of scrupulous adherence to the standard technique cannot be overemphasised, but few practitioners and pathologists would be inclined to spend the time necessary for a thorough examination of a large number of fields in more than 2 or 3 specimens from each sample. For iodine preparations double strength solution has been found more efficient. The additional factors which have been found to cause variation of result in different surveys are: (1) variation in the number of stools examined, (2) examination of samples of stool at different stages of treatment; (3) many of the samples are sometimes examined for occult blood, ova by concentration method and for fats in the stools but not for any protozoal infection.

SUMMARY

1. Samples of stools from 600 persons having vague gastro-intestinal symptoms and from 200 persons without such symptoms were examined for ova and parasites.

2. The carrier rate of *Ent. histolytica* was high—15·5 per cent. It was also higher among children below 5 years than that reported by other workers in India.

3. No marked difference in the carrier rates between the two sexes was noted.

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CASE NOTES

NON-ULCERATING NODULAR TYPE OF CUTANEOUS LEISHMANIASIS

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INTRODUCTORY

The usual type of cutaneous leishmaniasis (primary and not the post-kala-azar) occurs as oriental sore. Russian authors Kojevnikov (1941), and Latyshev and Kriukova (1942) have described the dry type of dermal leishmaniasis caused by Leishmania tropica.

We are reporting a case, which in many respects resembles this dry type of Russian authors. The lesions of this case are of dry nodular type rather than the dry scaly papules. The dry nodular type of dermal leishmaniasis seen as post-kala-azar remnant of *L. donovani* infection has been carefully excluded as discussed in the later part of this paper.

CASE REPORT

Mr. H. L., aged 29 years, postal signaller, Ferozepore City, attended the department of dermatology, V. J. Hospital, Amritsar, on 13-2-53 with the complaint of multiple nodules on the face. He was referred to the department of pathology for bacteriological examination of the nodules, and serological tests for syphilis.

HISTORY OF PRESENT ILLNESS: About four months back he developed a few papules on his forehead, and later more of these appeared on different parts of his face and head. They gradually increased in size and became nodular. They were never itchy or painful and none has ulcerated so far. He consulted

Preferred medication
of rheumatic affections.
Intensive antiphlogistic
and analgesic action.

irgapyrin

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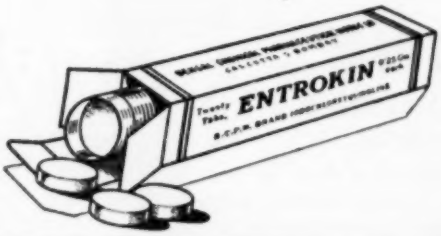

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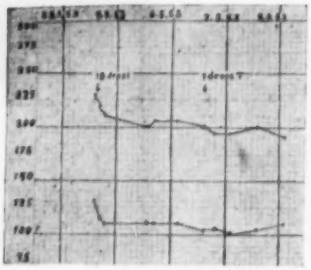

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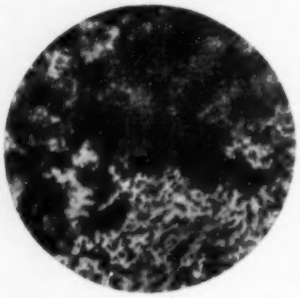

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various *hakims* and doctors, and was given various 'blood purifying' medicines orally and by injections, but to no avail.

PAST HISTORY: He has never lived out of Punjab. There is no history of systemic leishmaniasis, or venereal disease, or any other disease worth mentioning.

FAMILY HISTORY: His wife had two local sores (oriental sore?) about two years back, which were cured in about one year's time. There is history of his neighbours also suffering from the local sores. Nobody in his family or other associates have been known to have multiple local sores, or multiple nodules.

There is no history of systemic leishmaniasis in his family or the other associates.

CLINICAL EXAMINATION: A well built young man with multiple nodular swellings on his face and forehead (Fig. 1). The size of the nodules varied from that of a pea to an almond. They had

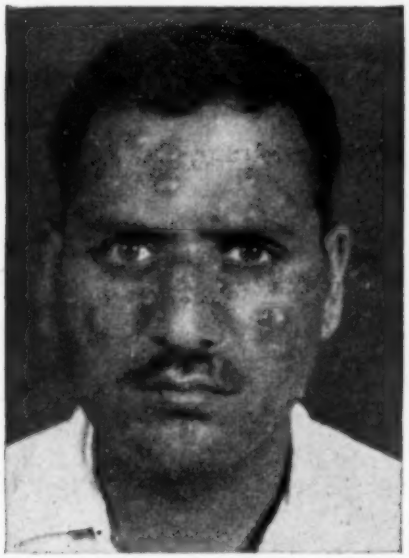

FIG. 1—THE PATIENT (H. L.) SHOWING MULTIPLE FACIAL NODULES

slight red discolouration. The surface was shiny and not covered by any scales. They were hard in consistency and slightly tender on pressure. The lobulation on the surface of some of these nodules suggested that they consisted of more than one smaller nodule. None showed any ulceration. The facial mucocutaneous junctions showed no lesions. The oral and the nasal mucosa were normal.

He had some nodules comparatively smaller in size on his back. Other parts of his body including his perineum were free.

The liver and the spleen were not palpable. There was no anaesthesia and no thickening of the nerves. Tendon reflexes were normal.

LABORATORY INVESTIGATIONS:

(1) NODULES:

The look of the nodules, their long duration, and the absence of surface ulceration made us think that probably they were not bacterial in origin, and so we decided to examine them for leishmania rather than bacteria.

Smear—One nodule was opened, its scrapings smeared on slides and stained with Giemsa stain. Examination of the smear showed mostly mononuclear type of macrophage cells, which were heavily parasitised by leishmania, hundreds being present in some cells. Quite a number of these cells had ruptured, and the whole field was literally littered with the free leishmania. Lymphocytes and large mononuclear type of cells were abundant, an occasional plasma cell was seen here and there, but there were hardly any polymorph to be seen. The leishmania varied in size from 2·5 to 3·5μ. The shape was fairly variable from stunted form to pretty long ones, some were rounded, but most of them were over-shaped. Those with good form and size very nicely showed the pale blue cytoplasm, the pinkish red nucleus, and the violet rod-like kinetoplast (Figs. 2, 3 and 4, *vide* Plate).

Gram smear showed no bacteria.

Ziehl Neelsen stain showed no acid-fast bacilli.

Culture—Morbid material from the nodules was cultured in N. N. N. medium, and Row's medium, using 500 units of penicillin per c.c. of the medium. Growth of leptomonad forms of the parasite was obtained on the fourth day. The flagellates were 12 to 30μ. in length, and about 2·5μ in width. Some stunted forms were seen. They all showed flagella, and sluggish motility in the wet preparation. At places beautiful rosette collections were seen.

Culture for pyogenic organisms yielded no growth.

Animal inoculation—In one mouse the morbid material was rubbed on the scarified skin of the back near the root of the tail. In the second mouse peritoneal injection of the morbid material suspended in saline was given.

The first mouse is alive to-day about four months after the inoculation, and has not shown any sign of the local or systemic disease.

The second mouse died after one month and twenty-three days. Post-mortem examination showed no visceral lesion. Smear and cultural examinations were undertaken both for bacteria and Leishmania from the peritoneum, liver, spleen, and heart blood; but all the results were negative. Histopathology of liver and spleen was also studied, and the sections were specially stained with Giemsa stain for leishmania, but the results were negative.

(2) BLOOD:

Smear—Ordinary blood films and films made by Shortt's technique showed no leishmania.

Culture—10 c.c. blood was centrifuged at 3000 r.p.m. for half-an-hour. The leucocyte layer from the top and also half c.c. of bottom layer of blood was cultured into 3 tubes each of N.N.N. medium and Row's medium. The media contained 500 units of penicillin per c.c. The cultures were kept for two weeks, but no growth was obtained.

Smears from the leucocyte layer, and the bottom layer of blood showed no leishmania.

Other Blood Examination—W.B.C.—8,200 per c.mm. with neutrophils—58 per cent, lymphocytes—32 per cent, monocytes—5 per cent, eosinophils—5 per cent. R.B.C.—5·29 million per c.mm. Haemoglobin—15·3 g. per cent, C.V.—47 per cent, M.C.V.—89 c.μ, M.C.H.—29 $\mu\mu$g., M.C.H.C.—32·5 per cent, E.S.R.—14 mm. after one hour (Westergren), W.R., Kahn test, V.D.R.L. tests—negative.

DISCUSSION

Various types of cutaneous lesions caused by leishmanias have been described in literature. The commonest type caused by the *L. tropica* is the oriental sore, and most of the other types caused by this parasite are usually in ulcer form, which are described in literature under the following clinical names:—Papillomatous type; deep ulcerating type; framboesiform type; verrucose type; lupoid type; tuberculoid type; keloid type.

Dry dermal leishmaniasis occurring in cured cases of kala-azar which had been treated with antimony compounds was described first by Brahmachari (1922) and subsequently by other authors. It is accepted that the dermal lesions in these cases were caused by *L. donovani*, and such conditions are now described under the heading of 'post-kala-azar dermal leishmaniasis'.

The dry type of dermal leishmaniasis caused by *L. tropica* has been described by the Russian workers Kojevnikov (1941), and Latyshev and Kriukova (1942). Stray cases of dry cutaneous lesions have been reported by other workers. Ferguson and Richards (1910) in Egypt described the lesions which usually affect the lower extremity and resemble the warty outgrowths or the papules. Carter (1909 and 1911) has also described the non-ulcerating oriental sore in India.

Our case is an unusual case of non-ulcerating nodular type of cutaneous leishmaniasis caused by the *L. tropica*. Before discussing the point that *L. tropica* is the causative organism of this case, a reference to the work of the Russian authors named above would not be out of place. They have established two types of cutaneous leishmaniasis caused by *L. tropica*—(1) moist type, and (2) dry type. The *dry* type is characterised by a long incubation period, long duration, numerous leishmania in the lesion, low virulence of the parasite to the mouse, and unbroken dry papules persisting for months. It has been proved by Kojevnikov (1942) that vaccination against the dry type does not protect against the moist type and *vice versa*, and that the two forms remain true to type after experimental transmission. This shows that the two sub-species or strains of *L. tropica* causing the dry and the moist type of lesions are distinct at least clinically and antigenically.

Our first object is to reason out that the causative organism of our case is *L. tropica* and not any other species of leishmania. There are two species of leishmania, *viz.*, *L. donovani* and *L. tropica* in India. Usually the areas of infection with *L. tropica* and *L. donovani* do not overlap, and it is believed to be so in India as well, where *L. tropica* infection is found in the West and *L. donovani* infection in the East, the approximate dividing line being that joining Delhi to Bombay.

Punjab is an area of *L. tropica* infection, where oriental sore is common. Our patient has all his life lived in the Punjab and had never gone beyond the borders of this province. There is neither the history of any prolonged fever, nor of taking injections of antimony preparations. His living in the endemic area of *L. tropica* infection, absence of history of kala-azar, and the history of sores very much like oriental sore in his wife and the neighbours, all point to the infection being due to *L. tropica* and not *L. donovani*.

Now, the question is:—"Is this strain of *L. tropica* different from the prevalent pathogenic strain, or is the mechanism of tissue reaction of our patient different from that which has been seen commonly?" May be, it is possible that the strain of our case is a mutant or variant with attenuated pathogenicity, and thus the tissue reaction is so modified that there is better host-cell-parasite tolerance, and the lesions exist without breakdown of the surface epithelium. There can be no doubt of the existence of the races or strains of leishmania species differing in their constant biological characters, including even their adoption to vectors. But the voluminous work on the differentiation of different species of leishmania on morphological, cultural, and serological grounds has so far been inconclusive (Mohiuddin, 1948; Kirk, 1950). So, in view of the foregoing discussion, we conclude that the parasite of our case is *L. tropica*, which is probably a variant of the prevalent parent strain. It seems to be similar to the *L. tropica* strain of the *dry* type of cutaneous leishmaniasis of Russian workers, because of very prolonged incubation period, probably over one year (usual range is two weeks to four months), presence of innumerable leishmania in the lesion (Fig. 4, *vide* Plate), the low virulence of the parasite to the mouse (our two mice have shown no lesions), and the unbroken dry lesions which have persisted for more than eight months now.

SUMMARY

1. A case of non-ulcerating type of cutaneous leishmaniasis has been described, giving the detailed history, clinical picture, and the laboratory investigations.

2. In the discussion, the *L. tropica* lesions as they occur in different parts of the world have been reviewed. In view of the fact that the morphological, cultural, and antigenic characters are of poor value in the differentiation or the identity of the unknown species, differentiation of leishmanias depends chiefly on the clinical picture of the patient and it was concluded that the lesions noted in this case were caused by *L. tropica*.

3. It has been further brought out that this case is an unusual dry type of cutaneous leishmaniasis caused by the *L. tropica*, which resembles the dry cutaneous leishmaniasis of Russian workers.

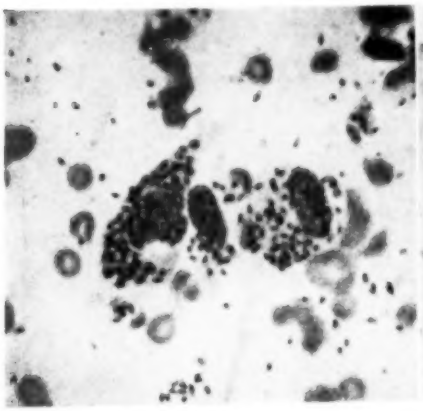

Fig. 2—Smear showing parasitised cells and free *L. tropica* bodies. × 450.

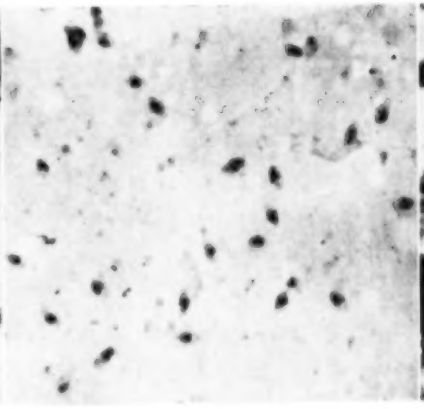

Fig. 3—*L. tropica* bodies showing nucleus and kinetoplast. × 1500.

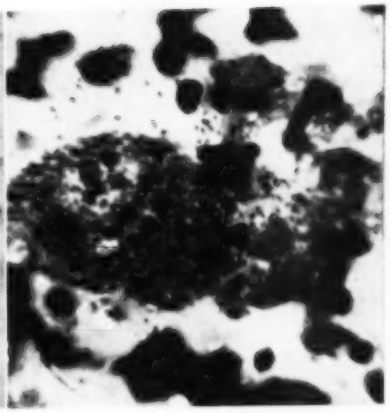

Fig. 4—Heavily parasitised macrophage cells showing *L. tropica* bodies. × 450.

SINGH AND SUR—*Nonulcerating Nodular Type of Cutaneous Leishmaniasis* *(pp. 400-03)*

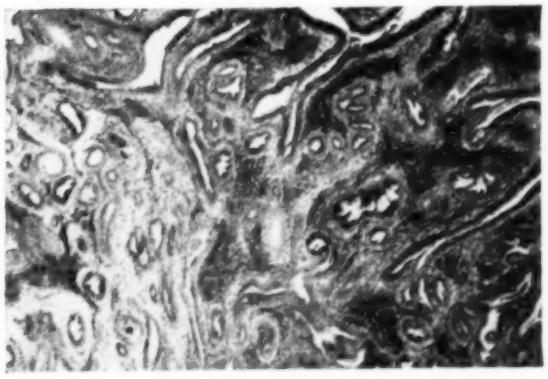

Fig. 1

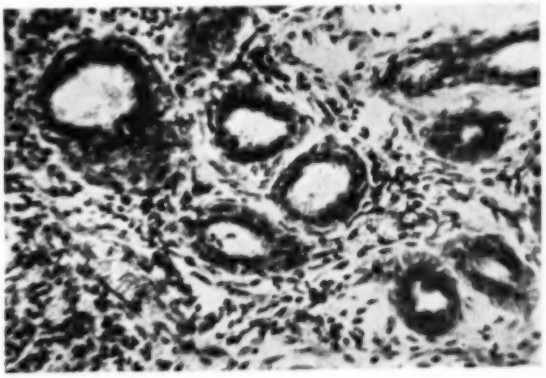

Fig. 2

DEY—*Naevus Syringocystadenomatosus Papilliferus* *(p. 403)*

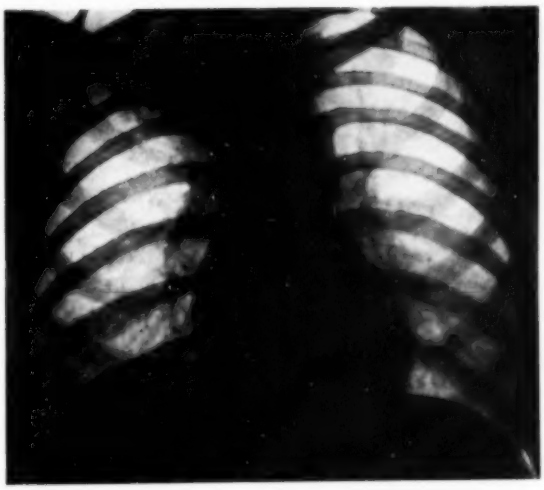

Fig. 1

CHAKRAVARTI—*Leukaemoid Reaction in Suppurative Pneumonitis* *(pp. 403-05)*

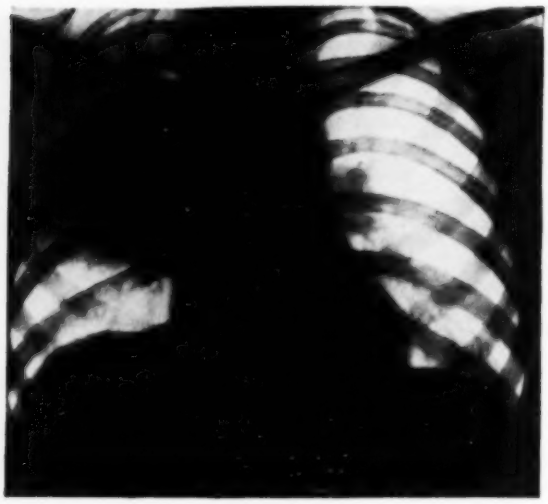

Fig. 2

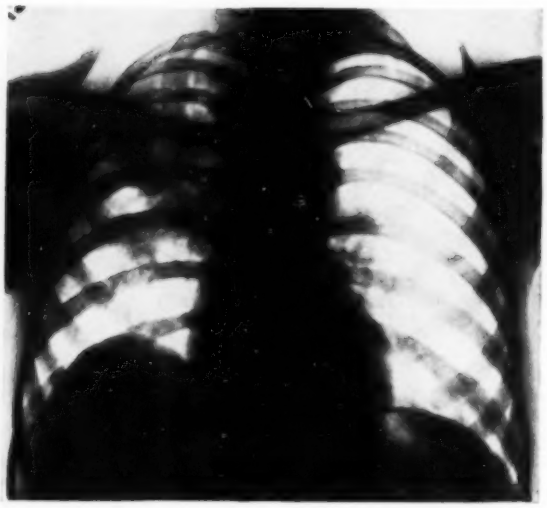

Fig. 3

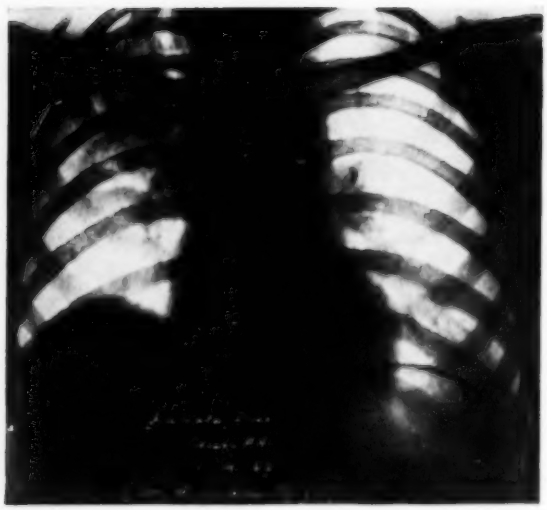

Fig. 4

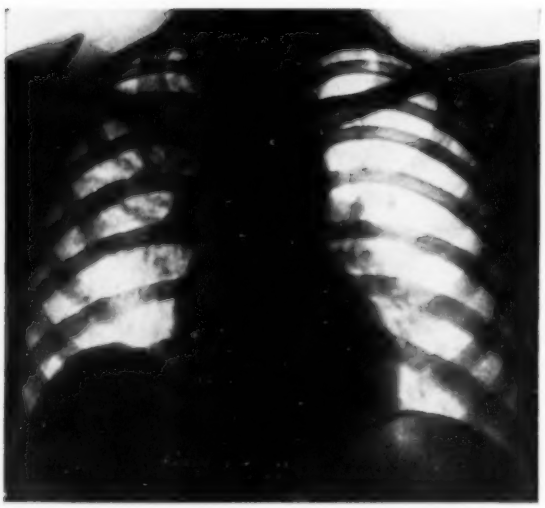

Fig. 5

ENGRAVED & PRINTED BY REPRODUCTION SYNDICATE, CALCUTTA 6

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NAEVUS SYRINGOCYSTADENOMATOSUS PAPILLIFERUS

N. C. DEY,

Department of Pathology, Assam Medical College, Dibrugarh

Naevus syringocystadenomatosus papilliferus is a rare congenital condition originally described by Werther in 1913 and since then reported from different countries. The subject has been recently reviewed by Sachs and Lewis (1937) and by Nodl (1939). As far as I know there is no record of such a case in India. The condition is one of naevus in relation to apocrine ducts in contrast to hydradenoma papilliferus, which is a naevus of the apocrine gland. The lesion usually occurs on the scalp as a verrucous plaque and occasionally cysts may be seen. It may be seen also in the axilla, genital or inguinal regions as rose red papules of firm consistency. In these cases they are described to vary in size "from the size of a millet seed to that of a hemp seed" and are often arranged in groups with vesicle like inclusions. The papules may be umbilicated sometimes in the form of molluscum contagiosum or they may form verrucous plaque as found by Stokes in U.S.A.

CASE REPORT

The following is a case of naevus syringocystadenomatous papilliferus diagnosed in the course of routine examinations of biopsy materials.

History of the case—S. B., aged 17 years, H. M., had an ulcerated swelling on the scalp, the duration of the disease being 1 year.

On physical examination an ulcerating mass covered with crust was found on the frontal region of the scalp which appeared as a plaque and on removal of the crust an ulcerated area was found in the centre and appeared like an infected sebaceous cyst.

After removal of the tumour which was sent to the department of pathology the following were noticed.

It was found to be a verrucous plaque ulcerated at one side and the cut section did not show any capsule formation round the growth.

Histopathology—On section (stained with haematoxylin and eosin) characteristic features were noticed (Figs. 1 and 2, *vide* Plate). The epidermis was found to be eroded due to the formation of an ulcer. There were papillomatous invaginations present and numerous villus-like projections were seen extending into the lumen of the cystic invaginations. The lumen was lined by two or more layers of cells, namely, (a) an outer layer cuboidal cells with deeply stained small nuclei representing the myoepithelial cells of the sweat duct and (b) an inner row or high columnar or cylindrical cells with large, oval, pale staining nucleus. The lumen in many villi contained cellular debris representing decapitation secretion which is characteristic of apocrine glands. Inflammatory infiltrates were present around the cystic spaces and consisted mainly of plasma cells. Deep in the dermis there were apocrine glands as is evidenced by dilated spaces.

Diagnosis—The abovementioned histopathological characters are diagnostic of naevus syringocystadenomatosus papilliferus.

ACKNOWLEDGMENT

My thanks are due to Dr. H. Haber, histopathologist to St. John's Hospital for Diseases of Skin, London, for kindly corroborating the finding.

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LEUKAEMOID REACTION IN SUPPURATIVE PNEUMONITIS*

AMAL CHAKRAVARTI, M.D.(CAL.),
Burdwan

A case is herein reported of a young lady, suffering from a pneumonic condition of the lung, which failed to resolve, presenting a leukaemoid reaction in her blood picture. Besides the rarity of such a state, the other features of interest in the case are: (1) the clinical onset and course of the disease; at one stage, the clinical picture and at least its radiological appearance presented a very close semblance to pulmonary tuberculosis; and (2) the leukoemoid blood picture underwent a reversal to normalcy with treatment.

CASE REPORT

Mrs. K. D., Hindu, female, 28 years, stated that about 11 months back, one morning on rising from bed she had a general feeling of ill-health. Towards the evening, the temperature shot up to 103°F. This was associated with pain on the right side of her back, cough and constitutional disturbance. Since then, the fever showed a remittent variation, fluctuating between 103°-100°F. She had, however, no obvious difficulty

*Case demonstrated at the 28th clinical meeting of the School of Tropical Medicine, Calcutta.

in breathing and was not strictly confined to bed. Treatment started on the third day of her illness with 16 lacs units of penicillin in 4 days caused disappearance of the fever but mild cough and slight pain in the chest persisted. She received no further treatment for this. A fortnight later, a second bout of low-grade fever started, in addition to lingering chest symptoms and the sputum showed a streak of blood. Moreover, she felt a foetor in her breath on coughing. An x-ray plate (Fig. 1, *vide* Plate) taken on 2-7-52 showed a uniform haze in the right apex and a zone of homogeneous opacity with an area of mottling in right infraclavicular zone. She was thought to be a case of pulmonary tuberculosis and advised 30 g. of streptomycin, P.A.S. (10 g./day), and conteben (200 mg./day), for 30 days. No blood count or sputum examination was done. The patient became afebrile again after the 12 gramme but the chest symptoms to some extent persisted and even though treatment was being continued, the third phase of the febrile bout commenced again on the 28th day of the streptomycin therapy. She was then treated with artificial pneumothorax on the right side. She received a primary fill and 3 refills in the course of the next 3 weeks. This had no effect either on the temperature or on the course of the disease. On the other hand the sputum which was scanty previously, increased in quantity to 4-6 ounces per day. She had changed to her former doctor and received a second course of 60 lacs of penicillin in 6 days. She again became afebrile but was not totally symptom-free though she felt considerable improvement. She had no further antibiotic, but had general treatment with tonics and vitamins. One month later, she had a fourth bout of fever with exacerbation of all her symptoms. In addition, she had a sharp haemoptysis, 6-8 ounces in 3-4 successive bouts. Her haemoptysis was controlled in 3 days' time. For the next 3½ months, she received no chemotherapeutic or antibiotic therapy, though she had all her ailments except haemoptysis.

At the end of this period and so to say, 6 months after the commencement of her illness, she for the first time came to the notice of the author. A second x-ray of chest (Fig. 2, *vide* Plate) dated 22-1-53, showed extension of the lesion, almost filling up the entire right upper and mid-zone, with a big area of breakdown in it. Blood-count for the first time showed: Total W. B. C.—55,000/cmm. with myelocyte and metamyelocyte—21 per cent, poly—75 per cent, mono—1 per cent and lympho—3 per cent. Total R. B. C.—3,750,000; Hb.—65 per cent. Sputum—no A.F.B.; fair number of pus cells; sputum culture showed *Strepto viridans, N. catarrhalis, Friedlander's pneumobacillus;* E.S.R. 139 mm./hour; cold agglutination test was negative. Clinically, the symptoms were disproportionately very much less, compared to radiological and chest findings. The spleen was palpable two fingers below the costal margin and there were no glands.

All contact with the patient was lost for the next 5 weeks, at the end of which she came back for the second time. Her ill health, foetor, fever and cough persisted: expectoration was 2-3 ounces per day. Another skiagram of chest (Fig. 3, *vide* Plate) dated 4-3-53 showed a condensation of the previous radio-opaque area with cavitation more prominent. The sputum showed no A.F.B. She was put on penicillin again; a total of 80 lacs being given in 12 days' time. The patient became afebrile; foetor and chest-pain, however, were still persistent. Sputum—no A.F.B.; pus cells, less than before; Negative for Vincent's spirillum and fusiform bacillus. Treatment was continued, but a change over was made to aureomycin. She received 2 g. daily in 4 divided doses. At the end of 4th gramme she had no further foetor or chest-pain. Sputum—no A.F.B.; pus cells, a few. Dosage of aureomycin was reduced to 1 g. daily in 4 divided doses and then 0·5 g. daily in 2 divided doses. On completion of 10 g., a skiagram (Fig. 4, *vide* Plate) was taken on 1-4-53 and it showed considerable fading out of the original opacity; soft cavitation, however, was noticeable still. She had no chest complaints. The sputum showed no A.F.B. Bone-marrow puncture showed that the proportion of mature to immature cells, was within normal limits. Aureomycin was continued for 3 g. more. She had since been followed up with a periodical check up. For the last 3 months and a half, she has no complaints pointing to the chest. She is afebrile still and has gained in weight. Blood-count is well-maintained within normal limits and E.S.R., after a temporary rise, again dropped down to 22 mm./hour. A perusal of the serial x-ray plates would show evidence of gradual healing by organization. In the last x-ray picture (Fig. 5, *vide* Plate) dated 16-7-53, there is no semblance of cavitation anywhere; fibrotic strands with stray exudative patches are well evident.

For a ready reference, the leucocyte counts and sedimentaion rates have been shown in Table 1.

TABLE 1—SHOWING LEUCOCYTE COUNT AND ERYTHROCYTE SEDIMENTATION RATE ON DIFFERENT DATES

		W.B.C. (Differential)					
Date	*W.B.C. total/ c.mm.*	*Myelocyte & metamye-locyte*	*Poly*	*Lympho*	*Mono*	*Eosino*	*E.S.R./ hour*
22-1-53	55,000	21	75	3	1	0	139
4-3-53	38,600	18	76	6	0	0	90
17-3-53	22,250	9	82	8	0	0	75
20-3-53	15,750	6	78	16	0	0	48
1-4-53	6,000	0	67	28	3	1	25
24-4-53	5,650	0	72	28	0	0	Not done
30-6-53	6,400	0	64	32	2	2	40
16-7-53	5,300	0	66	34	0	0	18

Discussion

Leucocytosis in response to infection, is neither unusual nor extraordinary: With pyogenic infections, it is almost always the rule: In cases of severe infections, particularly if the infective process is localized well or there is sudden and severe haemolysis, leucocytosis may be very high indeed. In such cases, the peripheral blood containing abundant leucocytes, may have a variable degree of immature leucocytes and some nucleated red blood corpuscles. Such a blood picture presenting semblance to leukaemia has been termed leukaemoid reaction by Krumbhaar (1926); with granulocytes dominating, this has been called, a myeloid reaction.

Leukaemoid reaction, needs differentiation from leukaemia. The differentiation usually is easy, if the blood picture is interpreted along with the clinical manifestation and bone-marrow biopsy. At times however, exclusion of leukaemia may not be final, unless autopsy has shown absence of leukaemic infiltrations in different organs. The highest count recorded so far for a leukaemoid reaction is 220,000/cmm. with 61 per cent myelocyte and 4 per cent myeloblast (Whitby-Britton, 1948).

The clinical pulmonary conditions, which have been known to give rise to leukaemoid blood picture are pneumonia, empyema, pulmonary tuberculosis and pulmonary neoplasm, undergoing a central necrotic breakdown.

In our case, leukaemoid blood picture was seen in a subject with pneumonic condition of the lung, later undergoing a suppurative breakdown. After a prolonged course of interrupted treatment, there was gradual healing by organization.

The remittent variation of temperature, absence of marked dyspnoea, and disproportion between clinical and radiological picture point to an onset with "atypical pneumonia". It is futile to attempt an aetiological diagnoses, since in the earlier stage, no investigation worth the name, was done. Culture of sputum done at a late stage showed *Strepto. viridens, N. catarrhalis* and Friedlander's pneumobacillus, but these cannot be incriminated as causative factors in the absence of their demonstration in blood culture.

Summary and Conclusion

A case of suppurative pneumonitis giving rise to a myeloid blood-picture has been reported. The case obviously passed through three stages: stage of pneumonia, stage of suppurative breakdown and stage of healing with organization.

The aetiology of the lung condition remains obscure as no investigation was made in the earlier part.

The response to aureomycin was dramatic though partial response was also evident with massive dosage of penicillin and streptomycin.

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COMPLETE ABSENCE OF THE LEFT LOBE OF THE LIVER

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Reports of atrophy of single or multiple lobes of the liver are not uncommon. The author has frequently encountered varying grades of atrophy of the left lobe of the liver in his necropsy series. Benz (1952) of Mayo Clinic in 1952 in his report on 32 cases of left lobe atrophy of the liver concluded that there is little evidence to support the view that atrophy of the left lobe of the liver is developmental in origin. His study of the material revealed that anatomical, nutritional, vascular and toxic factors by themselves or in combination accounted for the atrophy of the left lobe of the liver.

Complete absence of the left lobe of the liver is extremely rare. Kantor (1903) appears to be the first to have recorded entire absence of the left lobe of liver. Messing and Montague (1932) were the second to report absence of the left lobe of the liver. Merril (1946) in the 19,000 necropsy series of John Hopkins Hospital observed complete absence of the left lobe of the liver in a woman aged 36 years, who died of bronchogenic carcinoma with widespread metastasis. The liver in the deceased showed no evidence of metastasis or any other pathological findings on histological examination. Merril (*loc. cit.*) attributed left lobe atrophy of the liver in the deceased as a rare type of congenital anomaly.

The autopsy findings in a case of complete absence of the left lobe of the liver encountered recently are recorded below.

Case Report

A male, aged 25 years, sustained multiple injuries by an accidental fall from a height on 22-7-53 and expired 14 hours after hospitalisation.

Chief Autopsy Findings (P. M. No. 250): Fracture rami of pubic bone, right tibia and frontal bone; epidural, subarachnoid and cortical haemorrhages of the brain were observed.

Liver—The liver was significantly small and was made up of the elongated right lobe or unlobed mass. It weighed 860 g. It was 14·8 cm. long and 38 cm. circumference at the point of maximum thickness. The superior and anterior surfaces were smooth. The left lobe of the liver was absent and no trace of it was to be found (Fig. 1). The caudate lobe of the liver was of the size of a bean, attached to the posterior surface of liver by a thick fibrous band. It appeared as a distinct mass from the rest of the liver substance and this is unusual. It was to the left of the inferior vena cava. The quadrate lobe was not to be found. The gall bladder was located across the width of the liver 6 cm. from the upper border of the liver (Fig. 2). Its fundus was seen projecting out of the left border of the liver (Fig. 1). No indication of the left lobe of liver was seen on the posterior and inferior surfaces of the liver.

FIG. 1—SHOWING THE UNLOBED ANTERIOR SURFACE OF THE LIVER. THE FUNDUS OF THE GALL BLADDER IS SEEN PROJECTING FROM THE LEFT BORDER OF THE LIVER

FIG. 2—POSTERO-INFERIOR SURFACE OF THE LIVER SHOWING A DISTINCT CAUDATE LOBE, ABSENCE OF LEFT LOBE AND TRANSVERSE LIE OF THE GALL BLADDER

Histological study of multiple sections of the liver only revealed round cell infiltrations around portal areas.

The weights of other organs compared equally well with those commonly encountered in the normal human beings. Anomaly of no other organ was observed.

COMMENT

The gross appearance of the liver recorded indicates the total absence of left lobe of the liver. None of the causal factors for atrophy of left lobe of liver reported by Benz were observed in the deceased at necropsy. This suggests the possibility of an arrest in the formation and development of left embryonic bud of the liver as early as the 3 mm. stage of embryo.

SUMMARY

1. Complete absence of left lobe of liver is rare.

2. The gross appearances of total absence of the left lobe of the liver encountered in an autopsy are recorded. It is suggested that it may be a rare congenital anomaly of liver.

ACKNOWLEDGMENT

I am grateful to Dr. Ramachandra Rao, M.B.B.S., M.SC., for providing me with some useful information.

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FRAGILITAS OSSIUM

D. SHAMANNA,

S. V. SUBBA RAO AND M. SIDDAMMA

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A child aged one year was admitted to the wards of Sri Chamarajendra Hospital, Hassan, on 17-6-53 for general debility and deformity of both the lower extremities.

On examination, the child had fracture of both the femora and fracture of both tibiae. There was no history of trauma and manipulative movements of the lower limbs did not cause obvious pain to the child.

Clinical examination of other systems did not reveal any abnormality. The case was thought to be one of fragilitas ossium and the child sent for radiological examination.

The radiologist's report ran as follows:—

Fracture of both femora, of both tibia, of 6th, 7th and 8th ribs (right), of left humerus and of right ulna —healed fracture of 5th and 6th ribs (left) and humerus (right)—cortex of long bones exceedingly thin.

On further careful examination, the child had also blue sclera, and the diagnosis of fragilitas ossium was certain.

The child had no deformity of the skull or spinal column. There was no history of any other child in the family, born alive or dead with a similar cracking of bones.

The fractures were splinted with light improvised splints. The child as it was in the wards, developed some more fractures of the ribs.

Seven weeks after admission, the child developed head nodding movements and would nod the head from

side to side throughout the day. The cause of this was not quite obvious. Three days after the appearance of this symptom, on 8-8-53, the child became unconscious, when it was found to have developed multiple fractures of the vault of the skull and it died within a few hours of the onset of the unconsciousness.

The case is reported on account of its rarity and termination.

CYSTS OF THE SPLEEN

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Cysts of the spleen are surgical rarities. Though sporadic reviews of splenic cysts collected from literature used to appear as early as 1906, no author has done so much to draw our attention to the pathology and classification of splenic cysts as Royal H. Fowler. In 1913 he collected and published a review of 86 cases from literature and by 1930 was able to publish 137 cases. From 1940 to 1952 he collected another 265 cases and presented a masterly collective review which was published in March 1953. I have not been able to find any case published in available Indian journals. This leads me to publish and discuss a case that came under my care recently. The classification of splenic cysts based on microscopic studies of the cyst-lining is difficult. This lining is liable to undergo metaplasia and may sometimes altogether disappear in large areas of the cyst wall. The two broad groups in which the splenic cysts can be divided are the parasitic and non-parasitic ones. As benign neoplastic cysts form a large number of all splenic cysts Fowler (1953) gave a pathological classification of the common cysts under the heading of non-parasitic benign cysts. Those with cellular lining he calls primary and those without the cellular lining he calls secondary. Other authors call them true and false respectively. In primary cysts the haemangiomas form the largest group. Dermoids are rare. In secondary cysts the traumatic blood cysts form the greatest number.

Case Report

Govind Keshav, a male, aged 35 years, was admitted in the surgical wards on 10-7-53 for swelling in the abdomen.

He noticed the swelling 2½ years ago. It was gradually increasing in size but for the last six months he thought that it was stationary.

Except mild dragging pain the swelling itself was not causing him any trouble. But he was feeling weak and had pain in the joints of the lower extremities for the last four months.

On examination a diffuse bulge was seen in the epigastrium which on palpation appeared to be a well localised, fairly globular swelling about 10 inches in diameter. It was intra-abdominal. The right and lower margins were palpable very clearly while some part of the upper and the left margins could not be felt as they disappeared under the left costal arch. There was some tenderness on deep pressure. Fluctuations could be obtained easily. Feeble transmitted pulsations could be felt which disappeared when the swelling was palpated in the knee-elbow position. The whole swelling was movable more in vertical than horizontal direction. It could not be pushed down into the pelvis. The spleen which could be palpated separately was enlarged three fingers below the costal margin. The liver was just palpable.

The general condition of the patient was below normal. He was weak and emaciated and was running temperature up to 100°F. Pulse rate was 85 to 90 per minute. Examination of urine showed no abnormality. W.B.C. was 10,200 per c.mm., with 70 per cent neutrophils, 6 per cent eosinophils, 21 per cent lymphocytes and 3 per cent monocytes. Radiological examination after a barium swallow showed the stomach completely pushed over to the right side.

Three conditions were thought of for differential diagnosis, viz., a pancreatic cyst, a splenic cyst, or a hydatid cyst. After radiological examination the possibility of a pancreatic cyst not thought seriously because the swelling was arising on the left side of the stomach pushing it completely to the right. The most probable diagnosis was a splenic cyst. But there was some doubt for this diagnosis as the spleen was palpable absolutely separately from the swelling and the left leaf of diaphragm did not show any elevation.

At operation the cyst was seen protruding through the gastrocolic omentum which was slightly adherent to the cyst wall at places. After making a large opening in this omentum the margins of the cyst were palpated on all sides and then the true nature of the cyst became evident. There was a broad attachment with the upper half of the spleen under the left costal margin. And as this attachment was high under the costal arch, it could not be palpated clinically. The initial paramedian incision was converted into a ⊢ with a horizontal cut on the left side. The gastrosplenic ligament was divided. The cyst with the spleen was delivered out, the splenic pedicle was secured and the whole specimen was removed. The cyst was not adherent to any other organ. A small accessory spleen was found at the lower pole of the spleen. Except some fever and cough for the first 4 post-operative days, the patient made an uneventful recovery.

Study of the Specimen—The commonest cyst of the spleen is the large, solitary, unilocular cyst. According to Fowler (1953) they form 80 per cent of his total, 65 per cent of which were subcapsular and in 35 per cent they were embedded in the body of the spleen. The cyst under review differs from these in the fact that it grew away from the spleen from its gastric surface and grew towards the middle line crossing it and reaching the right lateral plane. Thus clinically it presented itself in the epigastrium. The attachment (Fig. 1) of the cyst with the spleen was broad and at places was 1½" wide. It was flush with

the spleen at the upper pole and the upper one-third of the posterior border. But the spleen in its lower half receded from the cyst to a great extent. This is why on clinical examination this attachment could not be inferred. The splenic tissue was seen as a collar coming upto the middle of this broad attachment of the cyst to the spleen. The pedicle of the spleen was behind this connection (Fig. 2).

FIG. 1—SHOWING THE ANTERIOR SURFACE OF THE REMOVED CYST
A—ACCESSORY SPLEEN. B—ATTACHMENT OF THE CYST TO THE SPLEEN. C—THE CYST. D—THE SPLEEN

FIG. 2—SHOWING THE POSTERIOR SURFACE OF THE REMOVED CYST
A—THE PEDICLE OF THE SPLEEN

The spleen was of bluish grey colour with a pale yellow perisplenitic patch on the diaphragmatic surface. The lower pole anteriorly showed an accessory spleen about 2" in diameter. The consistency of the spleen in its upper half was cystic. A sense of cross fluctuations was obtained between this part of the spleen and the cyst. The spleen measured vertically 10" from pole to pole and was 6" from anterior to posterior border. The cyst was yellow in colour with a whitish patch in the front where the gastrocolic omentum was adherent to the cyst. This area was surrounded by several dilated veins. The cyst showed three bulges on the posterosuperior surface one of which overlapped the posterior surface of the upper pole of the spleen. The cyst measured 11" horizontally and 9" vertically. The circumference at the middle was 16".

The cyst was opened horizontally from the superior surface. The cyst contained a semi-solid jellylike material, yellow in colour and uniformly filling up the whole cyst and its attachment with the spleen. In the upper half of the spleen, this material mixed up with the splenic pulp which was fluid in character. On the splenic side the wall of the cyst was deficient and it appeared as though the upper half of the spleen was part of the cyst though different in contents and structure. It was only in the lower half of the spleen that the difference between the cortex and medulla was evident. In the middle of this area an infarct was seen in the cortex. The wall of the cyst was thin and smooth without any intracystic growths. It has not been possible to carry out a detailed study.

The interesting feature of the cyst was its gradual merger with the upper half of the spleen where the cyst wall was not traceable. This feature and the contents of the cyst led the author to believe that the cyst was congenital in origin, either a dilatation cyst from lymph spaces or a dermoid.

ACKNOWLEDGMENT

I wish to thank the Chief Medical Officer, Irwin Hospital, Jamnagar, for allowing me to publish this case.

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AN UNUSUAL CASE OF TROPICAL EOSINOPHILIA

V. K. CHARI, M.B., B.S., T.D.D., MAJOR,
Madurai

A patient, Balasubramaniam, male, aged 25 years, came to me on the evening of 21-8-53 with fever, severe irritating cough with slight expectoration and pain in the sternal region.

History—On 5-8-53 he felt indisposed and on the next day he developed a temperature of 102°F. with severe cough and chest pain. He went to a medical practitioner who gave him penicillin 2 lacs intramuscularly twice a day together with sulphadiazine 2 tablets three times a day for a period of 5 days. When he found that there was no response to penicillin and

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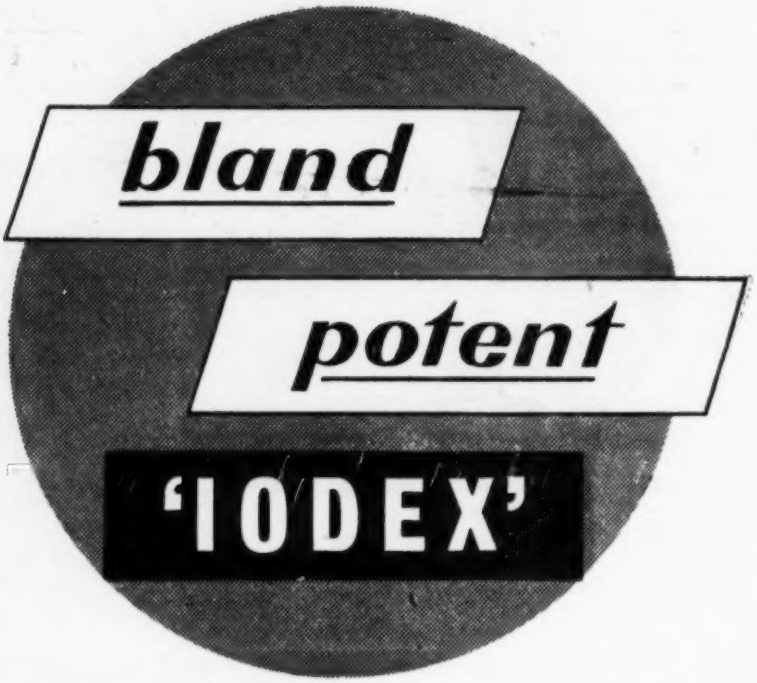

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sulphadiazine and the temperature was continuing as high as 103°F. or even a little more in the evenings with a remission of less than 2 degrees in the morning hours, he suspected him to be a case of typhoid fever and then put him on chloromycetin one capsule three times a day. He continued this for a period of 10 days. Still the patient was running high temperature as before. Then he thought of tuberculosis and wanted to give him streptomycin. The patient at this stage came to me for consultation.

On examination, the patient was found to be well nourished, no cyanosis, no clubbing of the fingers, no hurried respiration, no enlarged glands in the neck or elsewhere and not anaemic. Temperature was 103°·6F., pulse 122 per minute and respiration 28 per minute. Tongue was coated, throat slightly congested, abdomen soft, the liver and the spleen not enlarged. Heart sounds were normal but rapid. Nothing abnormal could be made out in the lungs except a few scattered sibilant rhonchi on either side.

Skiagram of the chest showed a hazy appearance of both the lung fields with increased vascular shadows, suggesting eosinophilia.

Laboratory investigations—Total white cell count —11,800 per c.mm. with differential count of poly 12 per cent, lympho 18 per cent, mono 0 per cent and eosino 70 per cent.

Total red cell count—4·5 million per c.mm. Hb—75 per cent (Sahli).

B.S.R. was 12 mm. after 1 hour (Westergren).

Blood for Widal 1 in 25 positive.

Urine showed no albumin and no pus cells.

Sputum was negative for AFB.

The diagnosis of this case was obviously tropical eosinophilia. In spite of high continuous temperature, I gave him Mapharside 0·04 g. I. V. on the morning of 23-8-53. No other drugs were given except some cough syrup. There was no significant improvement noticed after the first injection though the maximum temperature did not go beyond 102°F. After the second injection of Mapharside 0·04 g. which was given a week later, the temperature touched normal and the cough practically subsided. He had a course of six injections of Mapharside 0·04 g. at weekly intervals. The differential count at the end of the treatment was: Poly 61 per cent, lympho 29 per cent, mono 1 per cent and eosino 9 per cent.

The patient felt completely relieved at the end of the course and in fact joined his duty as a shop assistant long before he completed the course of six injections of Mapharside.

Conclusion

This case is reported on account of a continuous type of temperature which is an unusual manifestation of tropical eosinophilia.

MURINE TYPHUS IN VILLAGES OF PUNJAB

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Cases of murine typhus have so far been reported in the towns of Punjab by Mathur (1953, 1954a, 1954b, 1954c and 1954d). The following two cases will therefore be of interest in that both of them came from villages.

Case Reports

Case 1—M. S., 50, male, belonging to village Shabazpur, was admitted to the Civil Hospital, Rewari on 26-2-54 with a history of 4 days fever, loss of appetite and pain in the back; the pulse rate was 75 per minute and the temperature 100°F. The liver and spleen were not palpable. No rash was noticed.

Differential W.B.C. count was: polymorphs 82 per cent, lymphocytes 16 per cent and monocytes 2 per cent. The urine showed no abnormality. He was put on penicillin and salicylate mixture, with little effect on his condition. Blood was examined on the 10th and 14th days of his illness for a Widal and Weil-Felix test. The result was as follows:—

Day.	*T.C.*	*T.H.*	*B.C.*	*B.H.*	*Br.ab.*	*X2*	*X19*	*XK*
10th day	83	Nil	83	83	Neg.	83	125	125
14th day	25	Nil	50	125	Neg.	833	2500	50

As the patient was not lousy and there were no more cases in his house the diagnosis was one of murine typhus in this case. The temperature came down to normal on the 14th day without any specific treatment (Fig. 1).

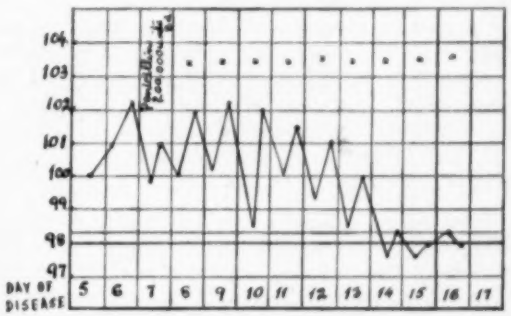

Fig. 1 (Case 1)

Case 2—H. S., 32, Sikh male, from Salaned (Karnal), had fever on the 15th February 1954 after he got wet in rain. He was admitted to the hospital on 19-2-54. At the time of admission and subsequently he complained of nothing except fever (Fig. 2). There were no joint or body pains, no headache and no flush-

ing of the face. He was mentally quite alert, but was slightly prostrated. He was treated for 6 days for malaria with quinine, but to no effect. On the 11th day

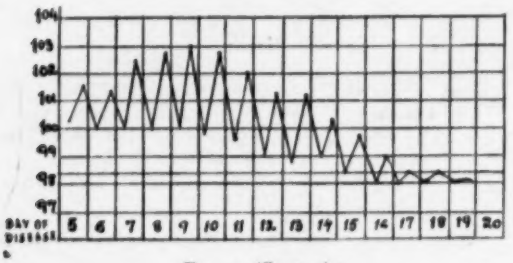

FIG. 2 (CASE 2)

of his illness his blood was examined for Widal and Weil-Felix tests with the following result:—

T.C.	*T.H.*	*B.O.*	*B.H.*	*Br.ab.*	*X2*	*X19*	*XK*
Neg.	Neg.	Neg.	Neg.	Neg.	125	125	Neg.

The total leucocytic count was 5,700, the differential count was polymorphs 23 per cent, lymphocytes 75 per cent and monocyes 2 per cent. No M.P. was seen. On the 15th day of fever it was noticed that he had a profuse rash on the front, back and top of the shoulders, infraaxillary region and lateral sides of the abdomen, dorsal aspects of the arms, forearms and the lower extremity. The rash was less profuse on the front of the abdomen, the chest and the volar aspects of the arms and forearms. A few spots could be seen on the forehead, but the face, the palms and the soles of the feet showed no rash. The rash was papular and of the size of small peas. Some spots had become copper coloured. The rash was raised above the surface of the skin and could be felt by passing a finger over it. The patient could not state exactly as to when the rash had appeared. On the 20th day of the illness when the patient was examined again the rash was peeling off in fine branny scales from the extremities, but the spots on the shoulders and back were brownish black in colour.

On the 13th day the spleen was enlarged 3 fingers below the costal margin and was firm. Serum examination on this day did not show any rise of titre of OX2 and OX19 agglutinins. The serum was examined again on the 18th day of the illness of the patient but it still did not show any rise in titre. But, on the 40th day the titre of both OX2 and OX19 had fallen from 1 in 125 to 1 in 83.

The serum was examined for the complement fixation test when it showed a rise in titre from 1 in 8 to 1 in 16 against the antigen of murine typhus, but no fixation with the antigen of tick typhus.

The diagnosis in this case was one of murine typhus fever. The fever, prostration, the profuse papular rash, the enlargement of the spleen and the positive complement fixation tests lent support to this diagnosis.

DISCUSSION

Murine typhus is caused by *Richettsia mooseri* through the bite of the rat flea Xenopsylla cheopis. The reservoir of infection are the rats. If, however, the complement fixation test had not been done in Case 2 the diagnosis would have been difficult. The patient also came from a rural area and kept cows, buffaloes, and dogs and the possibility of tick typhus in such surroundings is greater than murine typhus which occurs mostly in cities and towns.

Cases of murine typhus have been noted from September to February so far. There is a greater possibility of the disease in cities than in rural areas. However, cases can be found in small towns and villages. The disease is endemic and ordinarily not more than one case occurs in a household. More cases are found near *mandies* where the population of rats is greater than in any other place in a city.

In the cases described above no specific treatment was given. Chloromycetin, aureomycin and terramycin are all equally good. The dose should be 250 mg. six hourly for the first two days, when it can be reduced to 250 mg. 8 hourly for the next 3 or 4 days. The response to treatment is prompt.

The prognosis of murine typhus is generally good

SUMMARY

1. Two cases of murine typhus are reported from the rural areas of Karnal and Rewari.

2. The importance of carrying out the Weil-Felix test in cases of P.U.O. of weeks duration or more is great, to diagnose these cases.

3. Murine typhus has so far been found in Karnal, Thanesar, Rupar, Simla, Sabathu and Rewari. It is suggested that murine typhus occurs in other cities and villages of Punjab, but is either not investigated or is not reported.

ACKNOWLEDGMENT

My thanks are due to the Director of Health Services, Punjab, for permission to publish this paper, and to Dr. J. S. Sarkaria, M.S., Assistant Surgeon in charge, Civil Hospital, Rewari, who referred Case 1 and to Col. S. L. Kalra who carried out the complement fixation test on the serum of Case 2.

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CALCUTTA, JUNE, 1954

MITE-BORNE (SCRUB) TYPHUS IN INDIA

Typhus fever seems to have been causing sufferings in India since long, long time past. It is, however, the improved methods of diagnosis developed during the last few decades that have helped the recognition of these fevers. And, thus, it has come to be realised that the typhus group of fevers are fairly prevalent in this country.

Roy's[1] excellent review of reports of typhus fevers from all over India indicates this prevalence. More recently, many more sporadic cases or near-outbreaks of typhus have been reported, and are still being reported from all over India. Nevertheless, it seems very likely that many more cases, especially those which are too mild to attract attention or to lend themselves to clinical diagnosis, are missed or misdiagnosed.

There are four principal and several subsidiary fevers belonging to the typhus group. They are, however, linked up together into a common group designated as typhus fever, chiefly because they are all caused by organisms of the genus Rickettsiae. Moreover, the infection, in all these fevers, is transmitted from man to man, or from animal reservoirs to man, through various insects. These two characteristics, (a) very closely allied infecting agents, and (b) their spread through insect vectors, are responsible for linking up of all the fevers of this group with a common name typhus fever.

Nevertheless, typhus group of fevers have been classified, but this classification has been done on so very different bases, such as geographical, epidemiological, serological, or entomological, that choice of one in preference to others is rather very difficult. The most widely advocated proper name for each of the typhus group of fevers "includes both the epidemiological factor and the transmitting arthropod vectors" (Roy[1]). The heading of this presentation has been chosen on that basis. For practical purposes, however, it is perhaps most convenient to classify them on the basis of the results of Weil-Felix reaction. Of the two most frequent rickettsial infections prevailing in India, the more common mite-borne (scrub) typhus develops in the patients' sera agglutinin against proteus OXK, while the less common murine typhus develops agglutinin against proteus OX19. The relative prevalence of these two varieties of typhus in India is indicated by the following selected observations.

Out of 25 cases of typhus recently reported from Calcutta, 21 were mite-borne (scrub) typhus and the remaining 4 murine[2]. Eight of these 25 were seriously ill with 2 deaths, while the rest were only moderately ill and recovered.

In Barrackpore, among a group of 102 cases diagnosed as typhus, 72 per cent were found to be mite-borne (scrub) typhus and 19 per cent murine typhus, while the remaining 9 per cent belonged to an ill-defined group of typhus associated with the development of OX2 agglutinin[3]. Clinically, 80 per cent of these cases were mild and only 20 per cent were severe. Diagnosis of these mild cases had to depend essentially on laboratory methods.

In the Jammu province of the Kashmir State, there were 15 cases of scrub typhus in 1948, 18 in 1949, and more than 26 in 1940[4].

Indeed, every laboratory in India, doing routine Weil-Felix tests, would have found evidence of sporadic typhus infections especially of the scrub and the murine varieties. In this issue of the journal are reported 4 cases of scrub typhus and 2 of murine from Karnal (Punjab)[5,6] and a review appears of the incidence of scrub typhus and murine typhus in Bombay in recent years.[7] The literature is full of such occasional reports. Yet it is very hard to shake off the feeling that many more cases, especially of the milder varieties, are missed. The very mild nature of these cases with frequent absence of characteristic symptoms of typhus, may lead to misdiagnosis. Clinicians are apt to label these as cases of enteric, dengue, or influenza. Occasionally, the infection completely eludes diagnosis, and, thus, appears the term, P.U.O. in hospital returns.

Obviously enough, proper diagnosis of these mild, atypical cases would depend chiefly on laboratory methods. Moreover, even if clinical diagnosis were made, classification of a case into its proper type could not be effected without laboratory aid. It appears, therefore, that both for diagnosis and for classification of typhus into different types, laboratory tests are essential.

Laboratory methods of diagnosis of typhus consist of (1) Weil-Felix reaction, (2) agglutination or complement fixation test with rickettsial antigens, and (3) inoculation of susceptible animals with a view to isolation and identification of the infecting rickettsia. The difficulty in obtaining rickettsial antigens limits the laboratories to the first and the third methods.

Weil-Felix test is essentially an agglutination reaction. The patients' sera contain antibodies which

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agglutinate one of the three proteus antigens—OX 19, OXK, and OX2—*specifically*. These proteus antigens are closely related to the respective rickettsiae serologically. Hence, the antibodies, which are produced by the infecting rickettsiae, agglutinate the respective proteus which are used for testing these agglutinins. Scrub typhus, which is caused by *Rickettsia orientalis* transmitted by the mite *Trombicula deliensis*, develops in the patient agglutinin against proteus OXK.

A misconception seems still to prevail among bacteriologists about the specificity of Weil-Felix test. It is regarded by many that only those serological tests, which are done with rickettsial antigens, are specific; tests done with proteus, which are not themselves the infecting organisms, are non-specific. Nothing is more erroneous than this conception of specificity. Both of these tests are specific in the serological sense. The heat-stable rickettsial O antigens are exactly similar to the proteus OX antigens. Both are the major antigenic components of the respective organisms. The only apparently odd procedure in Weil-Felix test is that the antibodies developed by the rickettsia are tested with the proteus. Nevertheless, these antibodies are as much specific against the rickettsia as against the proteus. It would, therefore, be wrong to class Weil-Felix test among such non-specific tests as Wassermann or Kahn. Weil-Felix test still remains the only serological test available for routine diagnosis of typhus infections[8].

The titre of agglutinin against proteus OX19 is generally very high. In the Barrackpore series of murine typhus cases, a titre between 1 in 500 and 1 in 1250 was obtained in 70 per cent cases[3]; on the other hand, 90 per cent of the serologically positive scrub typhus cases showed a titre between 1 in 125 and 1 in 250, against proteus OXK. The diagnostic agglutinin titre against OXK is thus considerably lower than that against OX19.

Unfortunately, however, every case of scrub typhus does not show diagnostic titre of agglutinin. In the Barrackpore series, for instance, only 65 per cent of scrub typhus cases showed a definitely positive Weil-Felix reaction[3]. The remaining cases could be diagnosed only on the basis of pathogenicity tests in animals. In suspicious but serologically negative cases, therefore, animal inoculation is the only available aid to diagnosis.

White mice and guineapigs are the animals of choice—the former for scrub typhus and the latter for murine. A suspension of blood cells of patients is the best inoculum, and intraperitoneal is the most suitable route of administration. In positive cases, the animals become ill and may die later on. It is, however, preferable to sacrifice the ill animals at the height of infection. Rickettsiae are found in the endothelial cells of peritoneal scraping of the killed animals, and are seen best after Giemsa stain.

Occasionally, however, the rickettsiae are too attenuated to grow well in the inoculated animals. First inoculation may, therefore, show negative results. If the suspicion is strong, the first negative result should not be taken too seriously. On the contrary, an emulsion of spleen and brain of the first inoculated animal should be injected into another. It is very likely that passage through the first animal would have exalted the virulence of the rickettsiae to such an extent, that the second animal would show positive results[9].

In addition to helping the diagnosis of typhus, pathogenicity test may be useful in differentiating between the strains. The ascites and splenic enlargement produced in mice by the scrub typhus rickettsia are generally characteristic of this infection. Similarly, the scrotal and testicular reactions produced in male guineapigs by the murine typhus rickettsia are almost diagnostic of this infection.

Identification of the rickettsiae is, however, incomplete till the serological methods are employed. Rickettsial agglutination, or complement fixation with specific antisera, is as much useful as rickettsial neutralization technique used for differentiating between rickettsial strains of different antigenicity[10].

Recently, cutaneous tests with rickettsial antigens have also been used, especially for detecting retrograde infection[11]. The antigen is prepared from fertile egg culture of rickettsiae, which are killed with chloramphenicol. In infected subjects, intracutaneous injection of 0·1 ml. of 1/100 dilution of the egg culture emulsion produce an infiltrating erythema which lasts for 2·3 days. Normal individuals develop only a small white papule, which becomes reddish and disappear in 6 to 8 hours.

Diagnostic methods have, thus, improved considerably during recent years. So also have the therapeutic methods. Use of chloramphenicol in typhus have taken the dread out of the disease. Other antibiotics have also shown their worth, but not so very well as chloramphenicol has done. The drug is predominantly rickettsiostatic. The growth of the organisms is suppressed by the drug for about a week. Under this temporary protection, the patient mobilises his own defence. It is this built up defence which later eliminates the parasites[12].

Preventive methods have, however, not been so far successful. Active immunization against scrub typhus with a combination of live rickettsial vaccine and chemoprophylaxis is the only available method of protecting the susceptible without inflicting on him the con-

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sequences of the full blown disease[12]. Against homologous strains such a procedure seems to confer lasting immunity, but against heterologous strains the results are disappointing[14]. What further minimises the value of active immunization is that the prevailing strains of rickettsiae have shown themselves to be more heterologous than homologous[15].

Two other methods of prevention of scrub typhus suggest themselves: (a) elimination of the insect vector with suitable insecticides or insect repellants, and (b) extermination of rodent reservoir. Apropos the rodent reservoir, the rickettsiae of scrub typhus seems to be able to persist in the host for extremely long periods. In Swiss mice, for instance, the rickettsia persisted even 610 days after experimental infection[16].

The conquest of typhus fever is one of the most gratifying results of modern research. This short, and by no means inclusive, account would have served its purpose well, if it could draw the attention of both the physician and the pathologist to this disease, which, at present, seems to suffer from missed-diagnosis or mis-diagnosis. Only the closest association between the clinicians and the laboratory workers could salvage the typhus fever from the junk labelled P.U.O.

POLIOMYELITIS AND ENVIRONMENT

Improved sanitation and high standard of living have undoubtedly minimized the incidence of many infectious diseases in the more advanced countries. But it seems that such health measures have not been an unmixed blessing in the case of poliomyelitis. Poliomyelitis can no longer be considered a disease affecting infants alone; there is a definite shift of age incidence to the higher age groups especially in U.S.A., Scandinavian countries and in Australia[1]. It has been suggested that such a shift in the age incidence is due to the protection afforded to the children from exposure to polio virus in the early years of life with eventual infection at a later date when as in other virus diseases, the disease becomes more serious in nature with higher mortality rate.

In most of the tropical countries, this disease hardly occurs in epidemic form. Possibly because of the fact that the children community here acquires immunity from natural but inapparent infection, at an early age. Serological study conducted in various parts of the world in recent years tends to support this hypothesis. In Egypt, Dr. Paul[2] observed that antibodies to all the three types of polio virus appear at a very early age and by the age, 3 to 4 years, 75-100 per cent of the children have all the neutralizing antibodies. In such a highly immune community epidemics do not occur and only sporadic cases of paralysis are reported amongst the age group 0-4 years. Complement fixing antibody (to type 2 virus) which is rather indicative of recent infection, was also found to be present in significant titre in children under 5 years of age only[3]. A completely different type of picture was found in Miami, Florida. Here type 2 antibody was not found to appear until 5 to 9 years of age, when only 50 per cent of the children acquired it[4]. Incidence of clinical poliomyelitis was also found at a much older group of children. In Cairo 91 per cent of the cases occurred within 0-2 years, whereas in Miami only 14 per cent of cases occurred within that age group[1].

Another most interesting finding recorded by Dr. Paul[5], was his observation on the serological study in two Eskimo villages in North Alaska. In all the individuals under 20 years of age, no neutralising antibody to type 2 virus was detected, whereas every one above that age group had this antibody in the blood. It may be recalled that the last epidemic of poliomyelitis in this locality was recorded in 1930, which possibly conferred immunity to the whole community and then died out itself. Undoubtedly the new generation in this locality after the visitation of the last epidemic is a highly susceptible community for poliomyelitis irrespective of the age group.

The impact of environmental factors in the aetiology of poliomyelitis is not only to be inferred from the different conditions that exist in different countries. Similar factors may be traced from the study of groups of persons in different social strata in the same town as will be evident from the work of Hammon *et al*[6] and Melnick and Ledinko[7]. However, nobody would dare suggest reversion to primitive type of sanitation as a preventive measure for poliomyelitis. An active immunizing agent, for which intensive search is now going on, is what is most needed for an effective control of this disease.

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CURRENT MEDICAL LITERATURE

AN AETIOLOGY OF SCLERODERMA

MUFSON (*Ann. Int. Med.*, 39: 1219, 1953) writes that evidence collated from a clinical and psychologic study of several patients supports the belief that scleroderma, like Raynaud's disease, is a manifestation and the result of a psychosomatic disturbance with a definite pattern. The patient's sense of security always depends upon a commensalistic type of existence. When by force of circumstances this is destroyed, the inflexible nature of his personality does not permit readjustment. The dread fear initiates a generalised spasm of the minute vessels and the evolution of cutaneous and visceral scleroderma. While this life situation is operative the process persists and is cumulative in its self-destruction. If and when security is reestablished by chance or design, the process is reversed and the complicating thrombotic manifestations become amenable to vasodilating therapy. To attempt such therapy without first reestablishing security is to court failure and disappointment which, in turn, aggravate the disease.

Though the problem was presented from the medical viewpoint of one interested in peripheral vascular disease, the author required the cooperative help of the psychiatrist, the surgeon, the psychologist and the social worker to gain this insight, which frequently prevented the evolution of simple vasospasm to scleroderma.

ACUTE RESPIRATORY INFECTIONS IN EMPHYSEMA

SIMPSON (*Brit. M. J.*, 1: 297, 1954) from an analysis of 118 emphysematous patients with an added respiratory infection treated during the past five years observes:

Forty-five died. Although congestive cardiac failure complicate the issue, as it did in 42 patients, 26 of whom died for the most part three clinical pictures were presented: (1) acute bronchiolitis with its accompanying acute anoxia; (2) pneumonia; and, rarely (3) a psychotic state. The first two groups could be complicated by mental symptoms, especially after oxygen therapy. The presence of a marked cerebellar pressure cone was noted at necropsy in three psychotic patients. Of the 70 patients given oxygen therapy, 49 had mental symptoms or lapsed into coma, and 17 of them died: it is emphasized that in the most severely ill cases oxygen therapy should be continued in spite of these untoward symptoms. However, for the safer administration of oxygen the reason for using a nasal catheter as against a tent are discussed, namely, to avoid a rapid rise of arterial CO_2 with consequent lowering of arterial pH which occurs in the test and which is the cause of the coma rather than the raised arterial CO_2 itself. Patients can tolerate a high arterial CO_2 if it is gradually produced.

Study of the natural history of emphysema shows that the outlook is not good, many patients dying in the sixth and seventh decades or even earlier, and they are often incapacitated before this in the wage-earning period of life. The clinical diagnosis of emphysema is discussed, and the diagnostic value of the fundal appearances is emphasized. A poor temperature response in the presence of acute respiratory infection, mental symptoms in an oxygen tent, the fall in the systolic blood pressure on inspiration are a few aids in the diagnosis. Fundal oculi changes noted in advanced cases are: The retina is darker in color than normal; the veins are dilated (beyond the usual vein-to-artery ratio of 3:2), tortuous and much darker than normal and these appearances are accentuated in the presence of an acute respiratory infection.

SICKLE-CELL TRAIT AND MALARIA

ALLISON (*Brit. M. J.*, 1: 290, 1954) from a study on the relationship of sickle-cell trait and subtertian malaria infection observes that in indigenous East Africans the sickle-cell trait affords a considerable degree of protection against subtertian malaria. The incidence of parasitaemia in 43 Ganda children with the sickle-cell trait was significantly lower than in a comparable group of 247 children without the trait. An infection with *P. falciparum* was established in 14 out of 15 Africans without the sickle-cell trait, whereas in a comparable group of 15 Africans with the trait only 2 developed parasites.

It is concluded that the abnormal erythrocytes of individuals with the sickle-cell trait are less easily parasitized by *P. falciparum* than are normal erythrocytes. Hence those who are heterozygous for the sickle-cell gene will have a selective advantage in regions where malaria is hyperendemic. This fact may explain why the sickle-cell gene remains common in these areas in spite of the elimination of genes in patients dying of sickle-cell anaemia.

The implications of these observations in other branches of haematology are discussed.

RELAPSE OF VIVAX MALARIA TREATED WITH PRIMAQUINE

HANSEN AND OTHERS (*Am. J. Med. Sci.*, 227: 9, 1954) write that recently, primaquine has been reported as virtually non-toxic and practically always effective in preventing relapses. The authors report in this communication 9 cases in which primaquine failed to prevent relapses and one case in which primaquine produced a mathemoglobinaemic cyanosis in a Caucasian male.

The administration of 15 mg. of primaquine base daily for 14 days does not always eradicate the late tissue phases of the Korean strain of *Plasmodium vivax* malaria. Although the drug is highly effective in both artificially and naturally acquired infections, this dosage schedule does not completely cure all individuals.

Clinically evident cyanosis due to increased methemoglobinaemia may occur with this dosage. Further observations may disclose cases of severe anaemia and haemoglobinuria, especially in the darker skinned races. The 8-aminoquinolines are toxic drugs with a low margin of safety when compared with the suppressive antimalarials. One should be aware of their limitations and await the results of further long range studies.

OBESITY AND HEART DISEASE

MASTER AND OTHERS (*J.A.M.A.*, 153: 1499, 1954) give in the following lines the summary of their observations:

The relation of obesity to heart disease is reviewed. The harmful influence of obesity on the normal and on the diseased heart is well established. Persons with heart disease or hypertension who are obese have a much higher mortality rate than those who are of average weight or below.

New standards of weight and of hypertension for the general population were employed in this investigation. These recently established limits are more representative of the

present population than the figures previously employed. The frequency of obesity in patients with heart disease in private practice was ascertained. There was a definite increase in the relative frequency of overweight in men with coronary disease, including angina pectoris, coronary insufficiency, and coronary occlusion. Obesity is a strain on the heart and is capable of aggravating coronary disease. On the basis of the new criteria of hypertension, overweight occurred more frequently among men with hypertension than among the general population.

In women, obesity was not more frequent than in the normal population. This observation is being investigated in a large series of women. The reason for the possible difference between the sexes is not obvious. It may be significant that the proportion of obesity in the control population is higher in women than in men. The development of coronary disease and hypertension in women may not be influenced by obesity.

Although obesity occurs more commonly in patients with hypertension or coronary disease, no definite conclusion concerning the etiological relationship between obesity and these diseases can be drawn. The reports in the literature and their own observations, however, clearly indicate the importance of avoiding obesity in cardiovascular disease.

RAUWILOID-HEXAMETHONIUM FOR HYPERTENSION

FORD AND MOYER (*Am. Heart J.*, 46: 754, 1954) from analysis of the results of combined Rauwiloid-hexamethonium therapy in 25 cases of essential hypertension write that the current approach of the treatment of hypertension should be as follows: (1) In the patient with mild and labile hypertensive disease, Rauwiloid (an extract of Rauwolfia serpentina, prepared by Riker Lab.) alone is the therapy of choice. If the patient is unresponsive to this drug alone (after 6 to 8 weeks) then perhaps a combination with Apresoline or Veriloid is the therapy of choice. (2) It appears that in the case of severe but not rapidly progressing hypertensive disease, the patient should be initially treated with Rauwiloid alone. If the response is not adequate at the end of six to eight weeks, hexamethonium may then be added to a better stabilized individual who will have fewer and less severe side effects than when hexamethonium is used alone. The dose of hexamethonium must be arrived at by a titration procedure in which the amount of drug being administered is progressively increased until the desired results are obtained. (3) In the severe and rapidly progressing type (but not an acute emergency) of hypertensive disease (without renal failure), therapy must be initiated with more potent hypotensive drugs such as hexamethonium, and such stabilizing and secondary agents as Rauwiloid must be added later or used concurrently. (4) In the severe malignant type of hypertension and in cases of hypertensive emergencies, initial therapy with oral drugs is usually unsatisfactory. In these instances the administration of parenteral drugs under hospital conditions is indicated. For this purpose parenteral hexamethonium (intramuscular) or Veriloid (continuous intravenous infusion, and intramuscular) are the agents of choice. When the hypertension is well-regulated, long-term therapy can then be substituted for the emergency therapeutic approaches.

METHONIUM TREATMENT OF HYPERTENSION

SMIRK (*Brit. M. J.*, 1: 717, 1954) from an analysis of 250 cases including 28 with malignant hypertension treated for periods up to 3½ years observes:

The prognosis of malignant hypertension is much improved by effective control over the blood-pressure level by the administration of methonium salts.

The result of treating all of 28 malignant hypertensive patients including seven with substantial renal insufficiency or advanced heart failure, is that 21 are living and seven dead. The average survival time of those who died is 3·7 months and of those who are still survivors are leading productive lives, the men working at their previous occupations and the women doing housework.

In hypertensive patients with retinal grades II and III, taken together, the mortality figures are better in 122 treated cases (16·4 per cent) than in 53 controls (28·2 per cent), but no claim of statistical significance is made.

Objective improvements include: (a) the disappearance in most cases of such changes as papilloedema, retinal oedema, soft exudates, haemorrhages, and, after long treatment, of star-shaped macular figures; (b) the return to work of most patients under 60 presenting with malignant hypertension, cardiac asthma, or congestive heart failure, including in most instances the elimination of the use of digitalis, mersalyl, or substantial salt restriction; and (c) the electrocardiographic improvement and tendency to decrease of heart size.

The consistency with which these results have been reproduced during three and a half years leads the author to state that less satisfactory degrees of improvement are usually due to inadequacy of the regime used.

In a minority of patients the doses of methonium salts which relieve hypertensive manifestations lead to much discomfort from side-effects. Methods of alleviation which have helped some cases are suggested.

CORTISONE IN NON-RHEUMATIC CONDITION

ABER AND OTHERS (*Brit. M. J.*, 1: 1, 1954) from a study of the effect of cortisone and ACTH in non-rheumatic diseases in 43 patients observe:

Of the fourteen patients with disorders of the blood a favourable response occurred in three children with acute acquired haemolytic anaemia, and apparent clinical benefit resulted in the two patients with thrombocytopenic purpura. No effects were produced in aplastic anaemia, though one patient with acute agranulocytosis from thouracil made a good response. The effect of A.C.T.H. in leukaemia was at best temporary. This small experience suggests that, apart from acquired haemolytic anaemia and some cases of purpura, cortisone and A.C.T.H. have little place in the treatment of blood disorders.

Of the sixteen patients with disorders of endocrine function only three out of nine patients with exophthalmic ophthalmoplegia, responded well, the best results being obtained with A.C.T.H. in those examples of recent onset or rapid progression. Three patients with Simmonds's disease have made a dramatic and sustained improvement on A.C.T.H. Two patients showing the virilizing effects of adrenal hyperplasia have been treated by adrenalectomy and cortisone: in neither did the results obtained appear to justify the risks involved. 17-ketosteroid excretion was controlled in two pseudo-hermaphrodites by the use of cortisone.

The beneficial effect of cortisone and A.C.T.H. in asthma has been confirmed. The use of A.C.T.H. by intravenous drip and of cortisone by inhalation usually brought prompt improvement and was an important economy in prescribing.

In two patients with nephrosis a considerable diuresis attended treatment, and in one of them the remission obtained has lasted more than a year.

There is no evidence that A.C.T.H. influences portal hypertension accompanying cirrhosis, though apparent clinical benefit occurred in one patient.

ORAL CORTISONE IN HYPOPITUITARISM

Sheehan and Summers (*Brit. M. J.*, 1: 723, 1954) write that several aspects of the syndrome of hypopituitarism could reasonably be considered as manifestations of the secondary thyroid hypofunction. These include the mental slowness and lack of interest, the physical sloth, the extreme sensitivity to cold, and the absence of sweating; symptoms which are characteristic of myxoedema. It is therefore very interesting that these particular aspects are influenced by cortisone, which is an adrenal hormone, but not by thyroid.

Until ten years ago a variety of treatments were used in hypopituitarism, but, apart from the effect of pregnancy, the results were not impressive. When testosterone was first introduced its value was obvious, and the patients and their relatives usually insisted that the treatment should be continued. Cortisone in small dosage produces even greater enthusiasm, and all the patients treated so far have invariably returned for a further supply of tablets well before their last supply is exhausted.

Testosterone produces in patients with hypopituitarism a sensation of well-being and improves the physical strength and mental activity. It causes a regrowth of pubic and axillary hair and some return of libido. Cortisone has similar but greater effects on the physical and mental activity, though it does not usually restore body hair. The authors have, therefore, tried the effect of giving both substances together, but have not observed any definite additive effect apart from that on the body hair. If after a course of this combined therapy the testosterone is stopped and the cortisone is continued alone, the patient's general condition remains as good as before. On the other hand, a patient who has had cortisone and testosterone together is not nearly so well if an attempt is made to continue treatment with testosterone but without cortisone.

It is a common practice to prescribe a combination of many kinds of treatment for hypopituitarism: thyroid, oestrogens, deoxycortone, sodium chloride, and various vitamins. There are theoretical reasons for administering all of these substances, but detailed studies are required to ascertain what effect is actually produced when each of them is administered singly for a period to patients who are being kept on maintenance treatment with cortisone. The only definite observation we have made is that in certain cases the puffiness of the eyes is reduced by a combination of thyroid and cortisone, but not by either given separately.

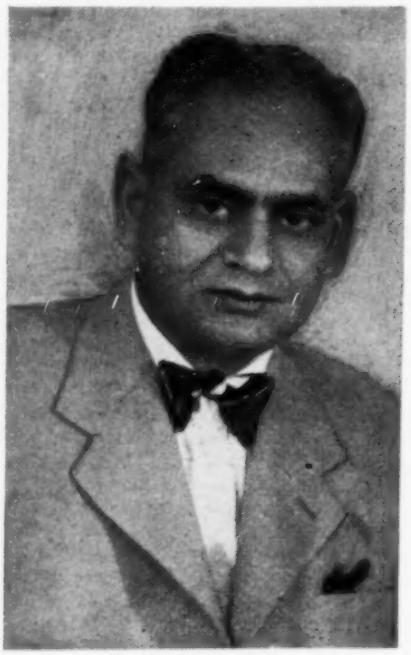
From the limited experience up to date it seems that cortisone therapy is the most useful method of long-term treatment of patients with hypopituitarism. A dosage of 12·5 mg. orally each day appears to be adequate for maintenance. A dosage of 25 mg. is equally satisfactory, but it does not produce a proportionate improvement in the signs or symptoms. Larger dosage, such as 50 to 100 mg. a day is very apt to produce transient mental disturbances; this is in marked contrast to the tolerance of large dosage which is shown by patients with rheumatoid arthritis.

CURRENT TOPICS

I.M.A. PRESIDENT'S TOURS AND ACTIVITIES

(FEB.-APRIL, 1954)

I was invited to attend the II Central Health Council meeting held at Rajkot. I was able to utilise this opportunity of visiting the following branches in Gujarat and Saurashtra, through the kindness of Dr. Trivedi—the Provincial Secretary and the Secretaries of the local branches concerned:



Dr S. C. Sen, President, Indian Medical Association

The programme was as follows:—

6th February, 1954—Left Delhi for Bombay and addressed the Bombay Branch on 'Medical Education'.

7th February—Reached Bhavnagar. Held meetings with Bhavnagar and Bhavnagar-para Branches.

8th February—Arrival in Rajkot. Halt at Rajkot on 8th, 9th and 10th.

Apart from attending the Central Health Council meeting, was able to attend a special meeting of the Rajkot Branch of the Indian Medical Association.

10th February evening—Visited Junagadh Branch and held meeting there.

12th February—Visited Dhoraji Branch and was given a joint reception by Dhoraji Branch and Dhoraji Municipality.

12th February evening—Reached Porbander, was received by the Porbander Branch and entertained to dinner and addressed the branch.

13th February morning—Left by air for Jamnagar, addressed the Jamnagar Branch.

EKZEBROL

(10% 10 c.c. Strontium Bromine)

By—**E. Tosse & Co., GERMANY**

In the **INDIAN JOURNAL** of Venereal Diseases and Dermatology Vol. 20., No. 1 Jan.–Mar. '54 7-12, Dr. K. C. Sahu, Assistant Professor and Physician I/C Skin & V. D. Dept.,; S. C. B. Medical College and Hospital, CUTTACK writes; "Strontium-bromide 10% 10 c.c solution (Ekzebrol) is the medicament of choice in cases of itching skin affection with or without exudates. The results in different varieties of cases reported are uniformly good. This drug has been tried by me in S. C. B. Medical Hospital..... remarkable effect has been observed..... in the treatment of 42 cases. Bromine when administered parenterally acts centrally and peripherally on the nervous system.....lowers the perception of skin irritation and has a general calmative effect on the patient.....The property of strontium is to tighten or constrain the vessels and cell membranes and hence check exudation & exert desensitization effect."

PENTAKOS

By—**Maggioni & Co., ITALY**

Dr. N. R. Bannerji M.B. B.S., D.T.M. writes in Medical Digest Vol. 2 No. 11 Nov. 53—"I had the opportunity of treating 133 cases of Whooping cough recently under different groups.....16 cases were treated with **PENTAKOS** alone. Results were better than expected. Definite improvement was noticed within a week. A patient needed nearly one and half bottle .....Pentakos alone is the drug which is comparitively cheaper and.....produces results. In my opinion treatment with Pentakos–the cidifying drug is the best. Pentakos is effective in controlling spasms of all types of coughs due to other causes. It contains Naphthylmethylimidazline Hydrochloride, Vit. C, Monosodium Phosphate, Sodium bromide in syp. base put in suitable proportions."

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DR. S. C. SEN *(third from left)* AT JAMNAGAR

13th evening—Left for Ahmedabad.

14th and 15th February—At Ahmedabad; addressed four meetings at Ahmedabad, including one at the Medical College on Medical Education and was given a big reception by Ahmedabad Medical Society.

16th February morning—Left for Baroda; addressed Baroda Branch the same evening.

17th February morning—Left for Broach and had a luncheon meeting with members of the Broach Branch.

17th evening—Reached Surat and addressed the Surat Branch the same evening.

18th February morning—Reached Bombay.

19th February—Returned to Delhi.

I have to thank all the members and the office-bearers of the branches visited, for their kindness, courtesy and entertainment. It was a real pleasure to me to meet members of remote branches, which are not even visited by Provincial Presidents. I could find out by personal enquiries their difficulties and grievances and I hope I was able to inform them about the difficulties of the Central Council and Central Office and about the task ahead. I hope I was able to impress on all members that the Indian Medical Association was everybody's job, and that all members should take active interest in the Indian Medical Association and above all be willing to pay subscriptions regularly and, if possible, voluntarily agree to pay higher subscriptions and donations.

I was very glad to note that in all the smaller branches, the membership is 100 per cent, or very near it. It is only in big places that the percentage of membership is smaller. Earnest efforts must be made to increase membership in big cities.

During March, I was able to visit several branches in Punjab on the invitation of the Punjab State Branch. I was able to visit 11 branches during six days. It was a very strenuous programme. Though tired, I enjoyed this trip immensely and I hope the meetings arranged were of as much benefit to the members concerned as they were to me. As Dr. Vohra, the State President has written about it, I need not say anything more about this tour, except to say that I am grateful to all the members of the branches visited and for their great kindness and courtesy to me. I am particularly grateful to Dr. Vohra who accompanied me throughout my tour.

In between the two tours, at the direction of the Working Committee, I had to pay a hurried visit to Madras, to discuss with the Madras Government, terms regarding the implementation of the Employees' State Insurance Scheme at Coimbatore. During my stay in Madras, I was able to meet and address the members of the Madras Branch. I was also able to pay a brief visit to Coimbatore and to meet and address the members there.

I am leaving for Zurich on the 19th April to attend the Council Meeting of the World Medical Association and may not be back till the end of May.

S. C. SEN,
President, Indian Medical Association.

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DR. SAIN DAS VOHRA'S REPORT OF THE PRESIDENT'S TOUR OF PUNJAB

Dr. S. C. Sen, President, I.M.A., was on tour in Punjab from March 27th to April 1st. He reached Amritsar on the 27th March by air and was given a warm welcome at the aerodrome by Dr. Sain Das Vohra, the Provincial President, Dr. Manmohan Singh and Sajinder Singh, the President and Secretary respectively of Amritsar Branch, Dr. Chuni Lal Bhatia, Provincial Treasurer, Dr. Khushi Ram Mehta, Provincial Joint Secretary, Drs. F. C. Shori, R. K. Malhotra, Bodh Raj Nanda, Bhawani Das Mehra and others. Dr. Sain Das Vohra introduced the President to all present. The party after light refreshments motored to Dr. Khushi Ram's residence where Dr. Sen was to stay. The members had a heart to heart talk with one another. After this Dr. Sen studied his tour programme presented to him by the Provincial President. It was as follows:

Saturday the 27th March—Ludhiana.

Sunday the 28th March—Moga, Ferozepur, and Tarn Taran.

Monday the 29th March—Pathankote, Gurdaspur and Batala.

Tuesday the 30th March—Amritsar.

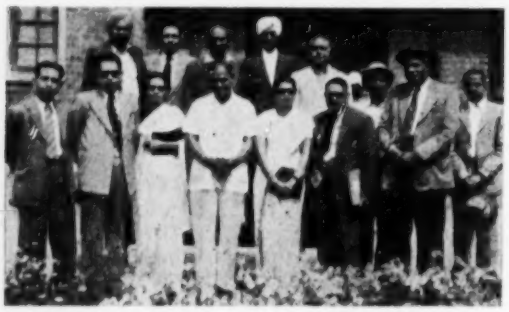
Wednesday the 31st March—Hoshiarpur and Jullunder.

Thursday the 1st April—Karnal, Jagadhri and Ambala.

The President and party left Amritsar after lunch on 27th March for Ludhiana, where the party reached at 5 p.m. A formal talk with Shri Jagat Narain, Health Minister, Punjab Government was held in connection with E. S. H. I. scheme. He informed that this was under the portfolio of Labour Minister, and advised discussion with the latter. He, however, assured every co-operation. The meeting of Labour Minister could only be held at Chandigarh and it was decided to take advantage of Dr. Sen's presence and to have an interview with the Minister at Chandigarh. The only alteration that could be possible without too much variations was change of date at Amritsar. Accordingly it was requested that the Amritsar meeting be held on Monday the 29th at 8-30 p.m. enabling the President to leave on Tuesday the 30th instant for a visit to Chandigarh. The Secretary, Amritsar Branch however agreed to this change although it was very inconvenient. Both the Central and Provincial Presidents regretted this inconvenience and short notice. The second change which was made in the programme was on April 1, when the meetings at Karnal and Jagadhri had to be postponed. The

president, however, assured to visit these places after sometime.

It is encouraging to note that the President was given a warm reception by all the branches he visited, and his presence infused a new energy and stimulus in the Branches. Dr. Sen's first question at the branches usually was how many practitioners there were and how many were members of the Association. He wanted the branches to explore the reason why the others had not so far enrolled. Except a few places where all the practitioners were members it was seen that about 40 per cent still were outside it. No special reason was forthcoming. It was suggested that the office-bearers should prevail upon members of the profession to join the Association and make it a still more representative body. At most of the Branches the President had to answer 2 questions. Firstly, how to face quackery and secondly what the Association has done for the members. In a short and impressive speech the President asked the members that the answer to both these questions was in the organisation of the Association. Every member should realise that he is the Association and should not look to the office-bearers to do any thing for them. We should all organise as good brothers and strictly observe medical ethics. We should not only meet for clinical meetings but meet often to discuss socio-economic problems and all work together as members of one family. Dr. Sen advised the members that we should change the present system of selling medicines and behaving like chemists. We should charge consultation fee, it may be small, and prove to the public that we are something superior to the quack. As members of the Association, Dr. Sen said, we could do propaganda and train the public to always visit qualified doctors in case of need and emergency. We should take exhaustive steps to prevent diseases and make the public pay us not in time of illness but when quite healthy. This advice he gave at Ferozepur and Jullundur where the public was also invited. A frank discussion took place and the public highly appreciated the views expressed by Dr. Sen, and promised to cooperate with the medical profession to allay the sufferings of ailing humanity.



DR. S. C. SEN (*front row, fourth from left*), AT PATHANKOTE (PUNJAB) WITH MEMBERS OF THE PATHANKOTE BRANCH AND DR. VOHRA, PRESIDENT, PUNJAB STATE BRANCH (*front row, sixth from left*)

Dr. Sen did not confine himself to the problems facing the medical profession only. He stressed the need of increasing membership of the Association which is the only means to enhance the representative character of the Association. He told the members that if they desire that the office should tackle and solve the problems facing the medical profession easily and successfully, it is necessary to maintain discipline in the Association, and every member should feel his responsibility. As a member only, he should regularly attend the meetings and promptly pay the subscription and obey like a disciplined soldier whether the office-bearers are right or wrong. In case of office-bearers and central and provincial representatives they should not think of the job honorary and do it halfheartedly. The representatives should make it a point to attend the meetings and bring the viewpoint of their branches while in return they will inform the branches about the activities of the Association. The Association he said is a democratic body and the undesirables can be chucked out and replaced by active workers. It is no use criticising others, yourself doing nothing. It causes discouragement amongst the honest workers.

On 30th March Dr. Sen with Drs. Vohra and B. L. Kapur went to Chandigarh to meet the Minister of Labour, Health and Director Health Services. The present working of the Employees' State Insurance Scheme, the Minister said, does not satisfy the labour. It was stressed on him that such duties should be handled by organisations and not individuals, and now that the I.M.A. has taken it up, it is assured that there will be no cause of complaint. A gist of agreement reached with the Union Government, Ministry of Labour, was explained to the Minister. He asked the Director, Health Services, to discuss the points and then put them up before him. Accordingly the whole position was discussed with the Director, Health Services who approved of the agreement. He, however, had not got the papers with him. He promised to do the needful, and submit his recommendations to the Government.

The President covered about 900 miles in six days and addressed 11 meetings. Discussions went around and even during his journey Dr. Sen hardly kept his mouth closed. The tour on the whole had been very successful and it can be definitely said that such tours will go a long way to solve the organisational work of the Association. The Vice-Presidents should also be urged to undertake such tours in the pockets of the provinces where the President had not been able to go, due to shortness of time.

INDUSTRIAL MEDICINE CONFERENCE

The positive task of improving the health of industrial workers was emphasised by West Bengal Chief Minister, Dr. B. C. Roy, inaugurating the fifth All-India Conference of Industrial Medicine in Calcutta on February 4, 1954.

Dr. H. P. Dastur, who presided, underlined in his speech the importance of industrial medicine and allied services in existing industries and their future planning. "Industrial Medicine is social service par excellence and winner of peace and stability in industry" he said.

Organised in connection with the Conference by the Society for Study of Industrial Medicine, an exhibition on "Safety in Industry" was opened by West Bengal Governor Dr. H. C. Mookerjee.

The conference was held in the Auditorium of All-India Institute of Hygiene and Public Health, with about a hundred delegates from different parts of India attending. At the morning sitting, Dr. Nils P. V. Lundgren delivered the Fourth Sir Ardeshir Dalal Memorial Lecture on the subject "Climate and Work in India."

He, in course of his lecture, reviewed Indian climatic conditions with special reference to research carried out in the country on human adaptation to climate. The review included studies of climatic comfort indices and comfort zones, observations on the climatic influence on the industrial produtivity rate, studies of industrial fatigue, and investigations on tropical housing.

Different aspects of problems confronting industrial workers and the industry were discussed at the scientific sessions of the conference held on the 5th and 6th February, 1954.

* * * *

The West Bengal Governor, Dr. H. C. Mookerjee, opening the exhibition said that when a country was getting rapidly industrialised the workers in industry had to be looked after as carefully as the industry itself. The workers were the backbone of the industry. If they were not properly looked after, then not only the workers but also the industry would suffer. The skilled industrial worker was an asset not only to the industry but also to the country. It was, therefore, the responsibility of the industry and the Government to ensure the welfare of the workers and safeguard their interests in all respects. Spending money on the health and welfare of the workers was a profitable investment as it would benefit the industry more than the workers ultimately. The industrialists of the country, he emphasised, should wholeheartedly accept this viewpoint and keep the workers contented, happy and healthy. The Government's share of responsibility would be to enact suitable legislation such as health insurance act, labour welfare act and so on and to ensure such other amenities to the workers in industry as would enable them to attain a reasonable standard of living. The responsibility for developing suitable methods and formulating practicable plans for combating hazards, mental stress and strain, accidents, diseases, etc., would be that of the industrial hygienists.

* * * *

Inaugurating the conference, Dr. Roy, who considered himself a "medical practitioner first, medical practitioner second," and would consider himself a medical practitioner till the end of his life, referred to the days 30 years back, when he contested a legislative seat from an industrial area, and came in touch with industrial workers. "I felt then and I still feel that the lot of the industrial workers has to be more carefully improved".

He pointedly referred to the absence of any plan in the country for solution of the industrial health problem and said things had drifted along without any understanding of the objective. Things were, therefore, still developed and in a chaotic condition, so far as industrial health was concerned.

Dr. Roy pleaded for looking after not only the physical health of the worker, but also the mental and psychological well-being. From his contact with industrial workers he realised that industrial health problem was greatly linked with that of keeping the mind of an individual worker at a level in which the worker could produce more and work better.

Moreover, it was not enough to make provision for attending the worker when ill or sick or injured—this was essential,—but it was also necessary to take preventive steps. And, again, industrial health programme, should not only include curative and preventive measures, but steps for improving the positive health of the individual worker.

Dr. Roy was, however, of the opinion that industrial health could not be included in the course of medical education, because, he said, the curriculum for ordinary medical students was heavy. But, he said, such a training could be taken up after graduating from the University.

* * * *

In his presidential address, Dr. H. P. Dastur pointed out that besides humanitarian and economic objectives, the aim of industrial medicine was to contribute towards industrial peace and progress by creating human situations within factories which would enable employees to find work a joy and life full of meaning. Industrial medicine and allied services had an important role to play in the existing industries and their future planning, he added.

Dr. Dastur was of the opinion that curative services rendered by clinics in factories or the Employees' State Insurance Scheme were necessary, but adequate preventive services should also exist. Industrial medicine not only provided the preventive side, but also aimed at achieving 'positive health', through constructive and educative work.

He regretted the 'lack of foresight' on the part of industrialists in this country. The main causes of industrial disputes, he continued, were "outraged feelings of workers and lack of management training". A comprehensive industrial health service helped improving the morale by producing a sense of security and tangible evidence of employers' interest in workers. Research, he said, was the life-blood of progress, but its urgency had not yet been fully realised in India.

Dr. Dastur referred to what he said 'lack of social skill' in the technically skilled executives and supervisors, and said Government and members of the medical profession had a responsibility in this matter. He also pleaded with the management to adopt "an enlightened industrial relations policy" in which a programme of 'positive health' should play a prominent part.

Dr. Dastur said, labour leaders were oblivious of the fact that the root cause of labour unrest was social void in the workers' industrial life. This lowered output and increased social void, compelled Government to intervene with "coercive legislation',

The economic man, he continued, divorced from social instincts is a myth. Modern industry is facing a grave peril, because neither the employer and the employee nor the Government care to recognise that industry is as much a social as an economic organisation. If order is to come out of such chaos, the constructive method of an industrial health service is necessary to take care of the total health of the whole working personnel from top to bottom.

Dr. Dastur welcoming the activities of the Society for Study of Industrial Medicine, pleaded for extension of its scope. If industrial medicine has to fulfil its ideal of mass welfare, it had to react to every human activity. He pleaded for establishment of an Institute of Industrial Health for training of personnel and undertaking consultative work.

* * * *

Welcoming the delegates and guests, Dr. P. K. Ghosh, Chairman, Reception Committee, said India was in the throes of rapid industrialisation. Industrial physicians along with physicists, chemists, engineers and industrialists would have to try to solve the problems arising out of such increased industrial activity.

He said a good deal of uncertainty was agitating the minds of men engaged in industrial medicine in West Bengal. The Employees Insurance Scheme was going to be imple-

mented soon. This was a step in the right direction, but fell short of the need. It provided no preventive service, and there was no scope for social medicine in it.

* * * *

Dr. K. V. Krishnan, Director of the All-India Institute of Hygiene and Public Health, proposing a vote of thanks, stressed the urgency of the need of finding a satisfactory solution of the problem of health, hygiene and accident prevention in industry.

* * * *

The types of accidents taking place in different industries and how to avoid these accidents were displayed at the "Safety in Industry" Exhibition organised in connection with the Conference.

NOTES AND NEWS

NEW CHEST SURGERY CENTRE FOR DELHI

With the arrival in Delhi of three members of a team of four internationally-recruited specialists the new Thoracic Surgery Centre being set up at the Silver Jubilee Tuberculosis Hospital is expected to begin work in the very near future.

The international team, which has been recruited by the World Health Organization to train local personnel in the techniques and management of both major and minor thoracic surgery, is headed by Dr. L. E. Volodarsky, formerly Chief Surgeon of thte Levanger State Hospital and later associate of Professor Carl Semb at Ulleval Hospital, Oslo.

As Chief Technical Adviser to the Medical Superintendent of the Silver Jubilee Hospital, Dr. Volodarsky will be assisted by Dr. E. Morrison, Anaesthetist, and Miss Berit Røe, Theatre Sister. The project will be conducted under the responsibility of the Delhi State Government. Apart from demonstrating techniques of chest surgery to physicians and auxiliary workers, the project aims to initiate a thoracic surgical service for the people of Delhi State.

CONVERSAZIONE IN TROPICAL SCHOOL

This year's Conversazione organised by the School of Tropical Medicine, Calcutta, was held on the 28th and 29th April 1954. On the opening day West Bengal Chief Minister Dr. B. C. Roy and Health Misister Dr. A. D. Mukharji were shown round the various deportments by Dr. R. N. Chowdhuri, the Director, and they evinced keen interest in the exhibition put up in every department.

The exhibition of graphs, charts and posters drew a large number of visitors, mostly medical men. The subjects treated in those exhibits covered studies and researches in indigenous drugs, protozoa, parasites and bacteria and included cholera, dysentery, kala-azar, leprosy and skin-diseases.

There were special exhibits of spurious drugs and experimental works of the Pharmacology Department and the various research equipment used in different departments of the School.

The last Conversazione was held in 1952.

OUTLOOK IN POLIOMYELITIS

In the Conference on Immunization which was held in Frankfurt-on-the-Main under the joint auspices of the German Federal Republic and the World Health Organisation's Regional Office for Europe, the present situation with regard to poliomyelitis was reviewed by Professor P. Lepine of the Pasteur Institute, Paris.

Passive immunization with gamma globulin, giving protection from the second to about the sixth week after inoculation, has but limited usefulness because at present there is no way of telling who is exposed to the disease and who has a natural immunity. This means that gamma globulin applied on a mass basis is a wasteful method. Not more than one in 2,000 injections really prevents an infection, and that only for a short time.

There are three ways along which active, long-lasting immunization is being sought:

1. By injection of killed virus with adjuvants; 2. By giving attenuated or less virulent living virus by mouth; 3. By giving living virus by mouth under the cover of passive immunization.

The first method is unlikely to produce good lasting immunity and the presence of tissue extracts in the vaccine to be injected is not without possible danger. The second method is perhaps feasible but not as promising as the third, which would imitate the natural build-up of protection as it occurs in countries where hygienic conditions are "bad" by modern standards, where children acquire the infection at a very early age and are able to deal with it before the protection—passive immunity—acquired directly from their mothers has worn off.

Much work needs still to be done if we are to be sure that by active immunization compaigns no greater risk is involved than by natural infections.

HENRY SIMPSON NEWLAND PRIZE IN SURGERY

The above prize, established to commemorate the services of Sir Henry Newland to the medical profession is open for competition to any graduate of any medical school within the British Commonwealth. The Prize will consist of a money award of one hundred pounds (£100) and a medal. The first award will be made in 1955, the subject of the essay being "The Influence upon Surgical Practice of Irradiation and Endocrine Therapy", based on personal observation and experience. Essays typewritten or printed in English, not exceeding 50,000 words with a distinguishing motto on the sealed envelope must be delivered to the General Secretary, Federal Council of the British Medical Association in Australia, 135 Macquarie Street, Sydney, not later than 20th May, 1955.

NEW FUNDS FOR WORLD-WIDE CHILD PROGRAMMES

Work in new directions and new geographical areas will be undertaken by the United Nations Children's Fund (UNICEF) as a result of decisions of its 26-nation Executive Board at a session recently ended at UN Headquarters.

By approving aid to children and mothers in four territories not previously assisted (Fiji, Western Samoa, and the Caribbean islands of Dominica and St. Vincent), the Board raised to 92 the number of countries and territories reached by UNICEF since it started work in 1947.

JOBS FOR WORLD'S DISABLED

In the development of social security standards the ILO has consistently advocated the need for social security institutions to look beyond the provision of monetary benefits to the possibilities of re-employment of sick and injured work-

ers through rehabilitation. Disabling accidents and sickness do more to reduce the output of mankind in industry and agriculture than all wars and strikes in history.

With this fact in mind, the Governing Body of the International Labour Organisation has ordered a discussion at the ILO'S general conference of the "Vocational rehabilitation of the disabled" opening in Geneva on June 2, 1954.

ARGENTINE CONGRESS OF THORACIC SURGERY

The second Argentine Congress of Thoracic Surgery will be held on August 17-20, 1954 at Buenos Aires, Argentine. Members of the medical profession in India, if interested in the conference, may communicate with Prof. Dr. Jorge A. Taiana, Presidente Nonorario, Caseros 2153, Buenos Aires.

UTTAR PRADESH MEDICAL COUNCIL

The name of the following medical practitioner has been erased under section 26 of the U. P. Medical Act, III of 1917, by the order of the Uttar Pradesh Medical Council from the Uttar Pradesh Medical Register on April 13, 1954:

Dr. Vishwanath Dube, L.C.P.S. (Bombay, 1919), son of Mr. Ganpat Rao, of Narendra Medical Hall, Manik Chowk, Jhansi. Registered with the Uttar Pradesh Medical Council under registration certificate No. 1473, dated October 20, 1922.

STUDY TOURS FOR THE MEDICAL PROFESSION

During summer and fall 1954, the German Educational Travel Association offers four combined study and sight-seeing tours in connection with four International Medical Congresses in Europe. Tour No. I, is a study tour for Gynaecologists from July 10 to July 26; Tour No. II, a study tour on the occasion of the International Congress about the Poliomyelitis at Rome, from August 15 to August 30; Tour No. III, a study tour on the occasion of a Congress held by the International Association for Orthopedic Surgery and Traumatology from August 16 to August 30; Tour No. IV—a study tour of foreign physicians on the occasion of an International Congress at Madrid, September 26-October 2, 1954, held by the International Union against Tuberculosis, from September 11 to September 26.

Persons interested in any of these trips may please contact Deutsche Studienreisen-Gesselschaft, Nurnberg, Veillodterstrasse I, Germany.

CORRESPONDENCE

The Editor is not responsible for any views expressed by the contributors

MEDICAL ETHICS

SIR,—It will be a very useful guide to attending-consultant relations if you kindly publish the B.M.A.'s medical ethics—rules as to the ethics of medical consultation in practice—page 71 of the supplements to B. M. J.—March 13, 1954.

In this connection, I suggest that the I.M.A. should formulate its own ethics suitable for our country to guide the relationship of the general practitioner to consultants, specialists and hospitals. In our country, the general practitioner has no touch with the hospitals, though he has to take of care of pre- and post-hospitalisation treatment of his patients. The I.M.A. should strive to obtain for the general practitioners, facilities similar to those available in U.K., e.g. general practitioners' beds, his easy access to pathological and radiological departments and availability of specialists' advice when so required by him.

Lastly, I request the favour of your publishing this letter in your esteemed Journal. I am, etc.,

K. P. DE,
Hony. Secretary,
Garbeta Branch, I.M.A.

Garbeta

SARCOIDOSIS

SIR,—In his article on Sarcoidosis Dr. D. J. Reddy writes "Periodical perusal of medical literature from 1952 to date gave no clue to any report on Sarcoid in India" (*J. Indian M. A.*, **23**: 237, March, 1954).

May I draw your attention to a case of sarcoidosis presented and discussed in the 14th clinical meeting of the Calcutta School of Tropical Medicine held on Friday, the 1st February 1952 and published in the *Indian Medical Gazette*, **87**: 111, 1952. I treated the case, while I served as a teacher of surgery in the medical school, Burdwan, West Bengal. The histopathological section of the lymph node was carried out by Dr. G. Chakraborty of Burdwan medical school. I am, etc.,

Berhampore, West Bengal — B. GHOSE

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SIR,—The article referred to by Dr. B. Ghose is a true copy of the article published by him and Dr. G. Chakravarty in the *Indian Jouurnal of Pediatrics*, **20**: 82, 1953). I had then given a suitable reply in my letter dated 8-3-54. I am to add in continuation that the author has not excluded A.F.B. histologically by differential stains. Moreover reticulum fibres are found intact in tuberculous states also and in hyperplastic tubercular lymphadenitis a similar picture as of sarcoidosis is not unlikely. In such cases a follow up or autopsy study could only confirm or exclude sarcoidosis. I am, etc.,

Vishakhapatnam — D. J. REDDY.

REVIEWS

ANNUAL NUMBER OF THE LICENTIATE. Vol. 4, No. 1. Published from Nicholson Road, Ambala Cantt. (India). Price Re. 1/-.

The annual number of *the Licentiate* which came out in April 1954 as a special number on nutrition and adulteration contains several interesting articles relating to these all important subjects. Dr. V. N. Patwardhan of Coonoor dealt with the problem of nutrition in India in general. Rightly he says that it is more an economic than a scientific problem. There is no speciality about malnutrition in India so far as the biological aspect is concerned. Yet some day like many other tropical diseases as they are labelled now, malnutrition may have to be termed as a tropical disease because of its prevalence due to low economic status of the people in the tropics in general. The writer also points out the menace of the increasing population in India and holds that unless something is done actually to check the upward trend in the population there would be the perpetual danger of chronic malnutrition in a large section of the community. The caloric intake is almost the lowest in India, being just above that of Indonesia only. The learned author also

touched many other important points like vegetarians in India, conservation of food, the role of animal in food production, adulteration and prospect of the Five Year Plan. In another interesting article Lt.-Col. Amir Chand deals with nutrition surveys and statistics. Dr. S. L. Bhatia draws attention to the shameful act of adulteration of food and medicine and discusses its prevention. In general this issue of *the Licentiate* contains many useful and interesting articles and the management should be congratulated for bringing out this special number.

ATLAS OF TUMOR PATHOLOGY. Published by the Armed Forces Institute of Pathology, Washington, U.S.A.

A conference of specialists on various subjects was held in accordance with a suggestion made, at the Fourth International Congress for Cancer Research held at St. Louis (U.S.A.) in 1947, for renewed attempts to simplify and standardise the nomenclature of neoplastic diseases. Following that conference, a sub-committee of several experts was appointned and was entrusted with the task to prepare and publish an Atlas on Tumor Pathology.

The main plan for the Atlas is to restrict the text to pertinent current information; give a regional account of the tumors to give the special pathology rather than the general pathology of tumors. Contributions, illustrations and text have been collected from numerous collaborators.

The tentative table of contents extends over 39 chapters, termed "fascicles", grouped under eleven sections. The various chapters (or fascicles) are to be published as and when they are ready, thus making it possible to avoid delay in publication, as well as to keep the atlas up-to-date.

TUMORS OF THE THYROID GLAND (Section IV—Fascicle 14 of the series "Atlas of Tumor Pathology" by Shields Warren, M.D. and William A. Meissner, M.D. Pp. 97 with 82 illustrations, several in colour. For sale at the American Registry of Pathology; Armed Forces Institute of Pathology; Washingtonn 25, D.C., U.S.A. Price $1·75.

This volume deals with the pathology of the thyroid gland. The first 20 pages are taken by descriptions and illustrations of "tumor-like lesions". The rest of the book is devoted to benign and malignant tumours of the thyroid. Art-plate reproductions of naked eye pathology and numerous microphotographs are very good indeed. A few coloured plates add to the attractiveness of the pathological material and text condensed. A very useful book of reference.

BRITISH EMPIRE CANCER CAMPAIGN. Thirteenth Annual Report, covering the year 1952. Edited by Sir Heneage Ogilvie, K.B.E., M.D., F.R.C.S. Published from the registered offices: British Empire Cancer Campaign, 11 Grosvenor Crescent, Hyde Park Corner, London, S.W. 1.

This is a voluminous report running to 426 pages showing the activities and attainments of a band of workers scattered in widely separated countries, but, nonetheless, grouped together with the laudable purpose of research on and control of the scourge of mankind—cancer. The report deals with the different aspects of cancer-campaign work, namely, Carcinogenesis, Hormones, Biochemistry, Tumour Viruses, Experimental Chemotherapy, Radiation Chemistry, Radiobiology, Radiotherapy and Clinical Pathology.

The report shows the details of the activity and research-programmes, carried out in the numerous centres under the B. E. Cancer Campaign; and these make fascinating reading. Compiling these extensive data must have been an arduous task, and the editor must be congratulated on the very able way in which he has fulfilled his undertaking.

This book must be in every progressive medical library and also on the desk of every worker in the field.

EXCERPTA MEDICA. Section XVI—CANCER. Published by Excerpta Medica, N.V.; 111 Kalverstraat, Amsterdam C. (The Netherlands). Subscription: £1-17-6 for 12 issues per annum. Agents in U.K.: E. & S. Livingstone Ltd., Publishers, Edinburgh.

The well-known international medical abstracting service Excerpta Medica (of the Netherlands) have been publishing very useful abstracts on medical subjects divided into several sections, each section covering one subject or a group of subjects. A new, the sixteenth, section on cancer has been started, as a monthly abstracting service, the first issue having been published in July 1953. This section deals with experimental and clinical problems of cancer research—aided by grants from the National Cancer Institute of the Public Health Service and the American Cancer Society. This new section XVI, on cancer, is under the editorship of M. W. Woerdeman, M.D. and M. Fishbein, M.D. The abstracts cover a wide field and should be on the table of every worker in this important branch of medicine.

ADVICE TO THE EXPECTANT MOTHER on the care of her health and that of her child. By F. J. Browne, M.D., D.SC., F.R.C.S.E., F.R.C.O.G. Tenth Edition, 1953. E. & S. Livingstone Ltd, Edinburgh and London. Pp. 48, paper bound. Price 1sh. net, postage 3d.

This is a small booklet of 48 pages lucidly written by an experienced Professor of Obstetrics and Gynaecology. Professor Browne has the reputation of a good teacher. This booklet is pleasant-reading and gives, in brief, the essentials of all the advice that may be given to an expectant mother, by her doctor—throughout the period of her pregnancy and also the subsequent few months, when the new and inexperienced mother may find it necessary to consult her doctor every day, being confronted with her daily problems regarding her baby. This is a good handy booklet which can be recommended to all expectant mothers; and also to busy medical practitioners.

THE 1953-54 YEAR BOOK OF GENERAL SURGERY. Edited by Evarts A. Graham A.B., M.D.; with a section on anaesthesia, edited by Stuart C. Cullen, M.D. The Year Book Publishers Inc., 200, East Illinois Street, Chicago 11, Ill, U.S.A. Pp. 590. Price $6·00 post paid.

The series "Year Books" has acquired a unique reputation during the past few decades. Although newer numbers and subjects are frequently being added to the already existing subjects, each new volume is an eagerly awaited one. The present volume deals with a comprehensive and assorted number of abstracts on the subjects of General Surgery and Anaesthesia. The editorial comments following many abstracts in the section on General Surgery make the pages more readable and the presentation more attractive. One would welcome a larger number of such editorial comments in the section on Anaesthesia. The fields have been well covered, neatly presented; the paper, printing, get-up and binding leaving little to be desired. A very useful hand-book for every practitioner in General Surgery and/or Anaesthesia.

NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL

Dr. S. S. Bhatnagar, Director, Scientific and Industrial Research has issued the following. Readers of the Journal to whom it concerns may utilize the form on the reverse and contribute to the success of the Government sponsored scheme of compiling a register of scientists and technicians of the nation.—ED., *J. Indian M. A.*

The increasing recognition of the role of science in the promotion of national welfare, and the two wars which utilized in an abundant measure and in a spectacular manner a large variety of scientific talent and skill, have spotlighted the scientist who was hitherto content to work in comparative obscurity, and brought him into the public view. It is now realised that the application of science on the scale necessary for social and economic development demands large number of workers, and not only should all the trained personnel available be efficiently and effectively utilized, but talented young men and women should be sought out wherever they exist, and trained to undertake the many tasks awaiting attention.

It is the appreciation of this position that has led to a stock taking of scientific personnel in various countries all over the world as an essential pre-requisite for assessing qualitatively and quantitatively the available man-power resources in each country and for formulating plans of training the personnel required for research and development. Thus in the United Kingdom, the collection of data relating to numbers and qualifications of scientists and technologists was undertaken under the supervision of the Royal Society of London in 1939. In the following year, the compilation of a National Register of Scientists was undertaken in the United States of America. In India, the demand for taking stock of the man-power resources was voiced by the delegates attending the 1947 session of the Indian Science Congress (Delhi). In August 1947, the Government of India appointed the Scientific Man-Power Committee with Dr. Shanti Swarup Bhatnagar as Chairman, and included among the terms of reference to the Committee, "The maintenance of a register of scientific and technical personnel to facilitate their utilization to the best advantage". The work of compiling the register was entrusted to the Council of Scientific and Industrial Research.

The National Register, which will be periodically revised and brought up-to-date, will provide a continuous census of the scientific man-power of the nation. It will be of assistance in: (*a*) the effective utilization of scientific talent, (*b*) assessing the gaps in the growths of science and technology, (*c*) supplying service personnel to industry, (*d*) finding alternative personnel in the prosecution of team work, (*e*) provision of personnel for educational and research institutions, and (*f*) keeping check on the drift of technical personnel to administrative departments. For fulfilling these purposes, it is necessary that the Register should be complete and comprehensive.

Appeals have been frequently issued in the past, requesting the scientists and technicians of the nation to co-operate in the compilation of the Register. The Hon'ble Pandit Jawaharlal Nehru recently said:

> *The Government of India have at present under consideration the report of the Scientific Man-Power Committee appointed in April 1947, to advise on the best method of utilizing and augmenting the scientific man-power resources of the counntry. A basic recommendation of the Committee, which the Government have accepted, is that immediate steps should be taken to prepare a roster of scientific talent that is now available. The necessity of such a roster is obvious.....I appeal to all persons in India possessing degrees or diplomas in Science to send complete information about themselves such as age, permanent and present address, their scientific qualifications, research and industrial experience, their present occupations, the nature of the research work if any, they are engaged upon, etc.*

So far, the response to the appeal has not been as satisfactory as it should have been. Despite these handicaps the Council proceeded with the work and has issued the first parts of Volume I and II of the Register comprising Engineering and Medical Personnel. This will be followed in quick succession by other parts. It is earnestly hoped that scientists and technicians would respond to the call of the Prime Minister and supply the needed information so that this national undertaking in which the Council is now engaged, may be completed satisfactorily and expeditiously.

Central Secretariat
North Block
New Delhi

Sd/-. S. S. BHATNAGAR,
Director,
Scientific & Industrial Research.

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

NATIONAL REGISTER OF SCIENTIFIC & TECHNICAL PERSONNEL IN INDIA

QUESTIONNAIRE FOR INDIVIDUALS ONLY

[Minimum qualification for inclusion of names in the National Register—A Bachelor's Degree in Science, or a Diploma in Engineering, or a Diploma in Medicine]

1. Name in full: (In block capitals commencing with surname)	
2. Address:	(a) Present: (Place of Work) (*b*) Permanent:
3. Date of birth.	
4. (a) Degrees, diplomas (with years, subjects and Universities). (b) Nature of publications if any.	
5. Connection with Scientific Societies, Learned Bodies, Professional Associations, etc.	
6. Names of the Institutions where you received practical training.	
7. (a) Past experience of service. (Nature and duration). (b) Present nature of work. (c) Present Designation and basic salary.	
8. Subject or subjects in which you consider yourself specialist, consistent with the details of qualifications and experience as furnished by you.	
9. Any other relevant information about yourself, not included above.	
Date————	*Signature*————

The information is required for the registration of your name in the NATIONAL REGISTER (Govt. of India). This questionnaire after completion, may please be returned immediately to the Secretary, Council of Scientific and Industrial Research, Old Mill Road, New Delhi.

SUPPLEMENT

Journal of the Indian Medical Association

VOL. XXIII, No. 9 CALCUTTA JUNE, 1954

ASSOCIATION NOTES

I. M. A. WORKING COMMITTEE

PROCEEDINGS OF THE 50TH MEETING OF THE WORKING COMMITTEE OF THE INDIAN MEDICAL ASSOCIATION HELD AT THE DELHI MEDICAL ASSOCIATION HALL, DELHI ON 13TH AND 14TH MARCH, 1954.

MEMBERS PRESENT: (*a*) *Ex-Officio members*: 1. Dr. S. C. Sen (New Delhi), President (in the chair); 2. Dr. B. V. Mulay (Sholapur), Immediate Past President; 3. Dr. D. V. Venkappa (Madras), Senior Vice-President; 3. Dr. A. P. Mittra (New Delhi), the Honorary General Secretary; 5. Dr. S. N. Mitter (New Delhi), the Hony. Joint Secretary; 6. Dr. J. N. Bahadur (New Delhi), the Hony. Joint Secretary; 7. Dr. H. R. Dawar (Delhi), Hony. Treasurer; 8. Dr. P. K. Guha (Calcutta), Editor, Journal of the I. M. A. (*b*) *Representatives from Provincial (State) Branches*: 9. Dr. C. S. Patel ((Bombay), 10. Dr. C. S. Thakar (Bombay), Bombay Provincial Branch; 11. Dr. H. C. Mallik (Dhanbad), Bihar State Branch;' 12. Dr. K. K. Sen Gupta (Calcutta), 13. Dr. Sukomal Sen (Calcutta), 14. Dr. P. K. Chatterjee (Calcuttta), 15. Dr. J. Mojumdar (Calcutta), Bengal Provincial Branch; 17. Dr. A. P. Shukla (Ahmedabad), 18. Dr. P. R. Trivedi (Ahmedabad), Gujarat and Saurashtra Prov. Branch; 19. Dr. B. K. Vinchure (Nagpur), Madhya Pradesh Prov. Branch; 20. Dr. Amar Nath Ghei (Gwalior), Madhya Bharat Prov. Branch; 21. Dr. G. V. Joshi (Hubli), M. and Karnatak Prov. Branch; 22. Dr. T. K. Dayalu (Bangalore), 23. Dr. P. D. Krishnaswami (Mysore), Mysore Prov. Branch; 24. Dr. S. D. Vohra (Amritsar), 25. Dr. M. D. Chowdhury (Ambala Cantt.), Punjab State Branch; 26. Dr. D. G. Ojha (Alwar), Rajputana Prov. Branch); 27. Dr. T. S. Balasubramanyam (Trichy.), 28. Dr. K. V. Swami (Madras), 29. Dr. K. Rama Rao (Madras), South Indian Prov. Branch; 30. Dr. C. O. Karunakaran (Trivandrum), Travancore-Cochin Prov. Branch; 31. Dr. H. N. Shivapuri (Kanpur), 32. Dr. S. N. Saxena (Kanpur), Utttar Pradesh State Branch. (*c*) *Co-opted* members; 33. Dr. Chamanlal M. Mehta, (Bombay); 34. Dr. S. S. Ugrankar, (Bombay); 35. Dr. Ved Prakash, (Delhi); 36. Dr. R. Sankaran, (Madras); 37. Dr. S. Samaddar, (Patna); 38. Dr. F. C. Shori, (Amritsar). (*d*) *Invited members*: 39. Dr. B. K. Sikand, (Delhi); 40. Dr. Hari Mohan, (Dhanbad Branch).

An Emergent Meeting of the Working Committee was held on the 13th and 14th March, 1954 in the premises of the Delhi Medical Association. Dr. S. C. Sen, the President, was in the chair.

1. *CONDOLENCE RESOLUTION*:

The following condolence resolution was unanimously passed, all members standing and observing silence for one minute:—

"This meeting of the Working Committee of the Indian Medical Association places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families:—

1. Dr. K. A. Appaiah (Bangalore); 2. Dr. Wazir Chand (Moga); 3. Dr. H. Hukku (Lucknow).

2. Dr. S. C. Sen informed the House that as authorised by the Central Council, he had discussions with the authorities of the Employees' State Insurance Corporation on 3-2-54 along with the following members appointed for the deputation by the Central Council:—

1. Dr. Chamanlal M. Mehta (Bombay); 2. Dr. C. S. Thakar (Bombay); 3. Dr. F. C. Shori (Amritsar); 4. Dr. Jagan Nathan (Coimbatore); 5. Dr. A. P. Mittra (New Delhi), Hony. General Secretary.

A covering letter and the minutes of the meeting held on 3-2-54 received from the Employers' State Insurance Corporation authorities were read out for the information of the members. The President then allowed the members to ask any questions if they so desired.

Questions were asked by Dr. B. K. Sikand, Dr. R. C. Gaulatia, Dr. B. V. Mulay, Dr. T. S. Subramanayam, Dr. J. Mojumdar, Dr. K. K. Sen Gupta, Dr. C. S. Patel, Dr. C. S. Thakkar and Dr. P. D. Krishnaswami. The President clarified all the points raised and also informed the house that Mr. Giri, the Union Labour Minister was willing to address them at 12 o'clock if they so desired. The House agreed to hear Mr. Giri.

3. *NEW PROPOSALS ACCORDING TO THE AGENDA*:

Item No. 1—The House discussed and accepted this item as follows:—

"The costly medicines will not have to be supplied by doctors. Arrangements for the supply of the same will be made by the Corporation, through the State Governments on the prescription of the doctors concerned. It will, however, be expected that the doctor will not be too lavish in prescribing expensive medicines".

Item No. 2—Dr. F. C. Shori suggested that the position in the Punjab must be clarified regarding the following points:—

(a) Whether new applications would be invited or not;

(b) Those who were now working on the Panel—their cases should be considered again.

(c) I. M. A. should be represented on the Allocation Committee in the Punjab and to bring about this, rules be amended if necessary.

(d) If the new proposals were accepted, those who were already on the Panel, should have no preferential treatment.

The House accepted Item No. 2 as follows:—

"Every doctor possessing registrable qualification duly registered and fulfilling conditions regarding accommodation, dispensing, etc., will be entitled to be placed on the list of panel doctors. To begin with, there will be no limitation on the number of doctors in any particular area. The selection will be made by a Committee on which the Indian Medical Association will be represented".

Item No. 3—Discussion took place regarding the maximum number of insured people on the panel of each doctor. The question was discussed at great length and it was decided to fix the maximum number at 1,000. A point was raised whether a doctor could have an assistant and if so, what extra number would be allowed on his Panel.

At this stage, Mr. Giri arrived and addressed the house. He started with the remarks that 'he is an economist, a planner and not a scientific person'. He gave all the credit to Dr. Sen for smoothing the difficulties, for, at one stage, he had thought he had come to a dead end. He emphasised that this Scheme was being started in South-East Asia for the first time and he wished the co-operation of the Association to make the experiment a success.

Dr. B. V. Mulay thanked Mr. Giri and assured him of the co-operation of the Indian Medical Association.

Dr. Chamanlal M. Mehta remarked that the attitude and atmosphere had completely changed since the time Mr. Giri and Mr. Subramanyam had taken over. He also remarked that if more money was available at a later time, the Gov-

ernment would reconsider the emoluments of the doctors, who, as the Minister had already agreed, were not well paid.

At this stage, Mr. Giri left.

Discussion continued after Mr. Giri had left, and the following decision was accepted:—

"The maximum number of insured workers on a doctor's list will be 1,000; if the doctor has qualified assistant, he may have another 500. There will be no minimum limit fixed, at least for the present".

Item No. 4—Dr. S. C. Sen explained in detail, the background of the interview and the proposal as it finally stood that the capitation fee which would include the supply of all ordinary medicines would be Rs. 6/- all over the country except for Greater Bombay and Greater Calcutta where it would be Rs. 6/8/-. After the explanations, Dr. Sen invited the opinions of the members.

Dr. C. S. Patel spoke at great length clarifying the position of the Bombay Branch and moved the resolution sent by the Bombay Provincial Branch. He was of the opinion that we should ask for more money. He challenged that sufficient money was available for increasing the capitation fee. He compared the figures and suggested that Rs. 6/8/- was not the proper amount. He did not suggest any definite figures and at the end, assured the house that Bombay would not go against the final decision of the Indian Medical Association.

Dr. R. C. Goulatia asked Dr. C. S. Patel the average income of the Bombay citizen; to which Dr. Patel showed his inability to answer. Dr. Sankaran (Madras) said that Madras was as expensive a place as Calcutta and Bombay and why the same amount should not be asked for Madras as well. The index of living in Madras, according to him, was equal to that of the other cities.

Dr. A. P. Shukla (Ahmedabad) also put the claim of Ahmedabad for the higher fee as the cost of living index in Ahmedabad was higher.

Dr. D. G. Ojha (Rajasthan) pleaded that smaller towns should be treated at par with the bigger ones where the income could not be well supplemented by the private practices of doctors.

Dr. S. C. Sen clarified, in detail, all the points raised by the previous speakers. He said that the deputation was authorized to obtain the best conditions that could be available. The deputation had finished its work to their best ability and it was for the house to accept or to reject the terms or to appoint another deputation. He explained that it was presumed that the cost of maintaining a house and office, etc. in Bombay and Calcutta was higher than in other places. He also emphasised that Madras and Ahmedabad never expressed their opposition to differential terms on previous occasions when they had ample opportunities to do so. Dr. Sen explained to the house in detail and suggested that the Working Committee should accept the proposal or reject it on behalf of the Indian Medical Association and not leave it to branches to have individual discussions. He appealed that we should take up this work and if we could deliver the goods, we would be doing good to the people, the profession and to the coming generation.

Dr. B. V. Mulay was of the opinion that members of our deputation should have taken more courage for better conditions but then emphasised that we had come to a crucial stage and must take a decision. He did not think it fair or advisable for the branches to deal with the matter individually but stick to the decision of the Working Committee.

Dr. S. S. Ugranker (Bombay) explained that the negotiations in Bombay were started long before but now he expressed loyalty to the decision of the Working Committee.

Dr. S. C. Sen wanted to know the decision of the house regarding the resolution of the Bombay Branch. Dr. Mojumdar proposed the following:—

"That the resolution of Bombay branch was also discussed along with item No. 4. The House accepted the terms agreed upon between the Government and the deputation".

The house accepted the proposal of Dr. Mojumdar and the following resolution was passed (with three members dissenting):—

"The capitation fee which will include the supply of all ordinary medicines will be Rs. 6/- all over the country except for Greater Bombay and Greater Calcutta where it will be Rs. 6/8/-".

Item No. 5—This capitation fee was based on 3 per cent incidence of sickness and it was decided that a notice of 6 months for termination of the agreement will be given after working of the Scheme for two years, in case no fresh agreement could be arrived at previously.

Item No. 6—List of costly drugs was also suggested as per separate statement:—(Appendix I).

The following resolution was moved in the house—proposed by Dr. K. K. Sen Gupta and seconded by Dr. J. Mojumdar.

"The Working Committee of the Indian Medical Association places on record its appreciation of the services rendered by the members of the deputation appointed by the Central Council in helping the Indian Medical Association in their efforts to evolve a workable scheme of Health Insurance for the medical benefit of the industrial employees of the country".

The House unanimously accepted the resolution.

4. The Rules and Regulations of the Employees' State Insurance Corporationn pertaining to panel practice were gone through in the meeting seriatim, and suggestions for changes were made, or clarification wanted, as per separate statements. (Appendix II).

5. *ANY OTHER BUSINESS WITH THE PERMISSION OF THE PRESIDENT*:

A. Nomination of Representative of the Indian Medical Association to the Indian Nursing Council—Letter No. 24154-INC dated 16/2/54 and 24/54-INC dated 4/3/54 of the Secretary, Indian Nursing Council on the subject:—

Dr. C. S. Thakar proposed the name of Dr. Chamanlal M. Mehta (Bombay), seconded by Dr. P. K. Guha.

Dr. Chamanlal M. Mehta (Bombay) was unanimously elected.

B. Nomination of Delegate for the 122nd Annual Meeting of the British Medical Association to be held at Glasgow from July 5 to 9, 1954.

Dr. U. R. Pargaonker (Hyderabad-Dn.) was nominated to attend the above meeting. In case Dr. Pargaonker was unable to go, Dr. P. N. Sinha (Patna) would represent the Indian Medical Association at the B. M. A. meeting.

C. Nomination of Delegates, Alternate Delegates and Observers for the 8th General Assembly of the World Medical Association to be held in Rome (Italy) from September 26 to October 2, 1954.

The following were nominated.

1. Dr. S. C. Sen (New Delhi), Delegate; 2. Dr. P. N. Sinha (Patna), Delegate; 3. Dr. U. R. Pargaonker (Hyderabad-Dn.), Alternate Delegate; 4. Dr. M. K. Roy Choudhury (Calcutta), Alternate Delegate; 5. Dr. M. V. Shetty (Mangalore), Observer; 6. Dr. W. . C. Rebello (Mangalore), Observer; 7. Dr. R. R. Deshpande (Bijapur), Observer.

D. Compilation of National Register of Scientific and Technical Personnel—Letter from the Council of Scientific and Industrial Research, New Delhi.

The Working Committee approved to help the Scheme and co-operate with the Government in compiling the list of medical personnel. The Honorary General Secretary was authorised to take necessary action.

E. Enforcement of Compulsory Service in rural dispensaries for medical Graduates before setting up their private practice—Letter No. 627/63/53-54 dated 24/2/54 of the Hony. Secretary, U. P. State Branch along with his letter addressed to the Director of Medical Health Services, U.P., on the subject and reply received to it.

It was decided to circulate the letter of U. P. Government to all the State and Provincial Branches to elicit

opinion and information on the subject. This matter is to be discussed in the next meeting of the Working Committee.

F. Medical days for France and French Union to be celebrated in 1954—Request for attendance by the Societies of Medicines from India—Letters No. 7-24/53-MI dated 5/2/54 and No. 7-24/53-MI dated 26/2/54 from the Director-General of Health Services on the subject:

The House was of the opinion that it would not be possible for the Association to send a representative of the Indian Medical Association on this occasion in France.

G. Nomination of a Delegate to a meeting of Medical Doctors and Public Health Officers to be held in Bad Gastein, Salzburg, Austria from 24th to 28th May, 1954.

The Working Committee considered the matter, but regretted it was not convenient to send a Delegate to Austria for this occasion. The Working Committee wished that greetings and good wishes of the Indian Medical Association be conveyed to the sponsors of this meeting at Bad Bastein in Austria.

H. Consideration of Dates and Venue for the next two meetings of the Working Committee.

At the last meeting of the Working Committee at Hyderabad it had been decided that the July meeting be held in Jaipur and the October meeting at Bangalore or Mysore. The members, however, expressed a desire that since it would be rather hot in July at Jaipur, this branch be requested to arrange for the meeting in October, if Bangalore also agreed to have the meeting in July and Jaipur branch found it convenient to have the meeting in October.

The Honorary General Secretary was directed to write to both these branches and arrange accordingly. If, however, either of the branch found it inconvenient to change their original programme, then no change would be made.

The dates for the July meeting were accepted as July 24 and 25, and October meeting as October 21 and 22.

The following resolution was passed unanimously:—

"This meeting of the Working Committee of the Indian Medical Association places on record its deep appreciation and thanks for the hospitality and courtesy accorded to its members on the occasion of the meeting held at Delhi on 13th and 14th March 1954 by the Delhi Medical Association and offers its grateful thanks to the Delhi Medical Association for permission to hold the meeting in their hall."

The meeting then came to a close with a vote of thanks to the President.

S. C. SEN,
President,
Indian Medical Association.

J. N. BAHADUR,
Honorary Joint Secretary,
Indian Medical Association.

APPENDIX I—LIST OF COSTLY DRUGS

Emergency Drugs—Inj. Nikethamid Preparation and other cardiac stimulants, Inj. Caffein Soda Benzoas, Inj. Glucose, Diphtheria Anti-toxin, Tetanus Anti-toxin, Gas Gangren Sera, Inj. Adrenalin, Inj. Morphia, Inj. Pituitary, Inj. Quinine, all Dressings, Sulpha Injections, Penicillin. *Special Drugs*—All Antibiotics, all Sulpha Drugs (Tablets, Injection), all Preventive or Curative Sera and Vaccines, Vitamin Preparations—oral and injections. Liver Preparations, Endocrines including Insulin and ACTH., Transfusion solutions and plasma, Arsenicals, Coramin, Digoxin and other Cardiac Stimulants, Antimalarials, Elastic bandages and plaster of Paris bandages, Mercurial Diuetics. Emetin. Anti Amoebic, P. A. S., Iso nicotin Hydrazide, Santonin, Banocid, all Dressings, Anti-kalaazar drugs, Anti-Leprosy drugs, Local Anaesthetics.

APPENDIX II

Minimum List of Medical and Surgical Equipment:
1. Serial No. 5 Delete "Size 11". 2. List of Drugs—Alternative list of drugs enclosed.

RULES

3. P. 2, Sub-Item (4), line 6—Delete "or eligible for registration". 4. P. 2, Sub-item (4), line 8—Delete and substitute "allopathic" by "Modern". 5. P. 4, Item 6, line 1—After the "Corporation", add "and the Indian Medical Association". 6. P. 5, Item 7(1)(b)—Delete "b" and substitute by (b) "an equal number of persons nominated by the Indian Medical Association". 7. P. 5. Item 7(4)—Add "The Indian Medical Association may terminate the membership of its representatives earlier if it so wishes". 8. P. 6, Item 7(5), line 2—Delete "State Government" and replace by "Corporation". 9. P. 7. Item No. 8 (4)—Add "The Indian Medical Association, Central Office, State and Local Branches concerned." In (d), delete "or medical association". 10. P. 9, Item 14(2), line 3—"Sent" to be replaced by "served". 11. P. 14, Item 23(1)(c)—Delete the whole (c) and substitute by "(c) An equal number of nominees of the Indian Medical Association". 12. P. 14. Item 23(1)(e)—(e) to be deleted.

P. 14. Item 23(2)—from which category a woman will be appointed. 13. P. 15. Item 23(5)(i)—There should be a proviso by which membership could be terminated at the discretion of the Indian Medical Association. Item 23(6)—"State Government" to be replaced by "Corporation". 14. P. 16. Item 24(1), 3rd para—Add "He should not be paid Counsel, Solicitor or Advocate". 15. P. 17. Item 25(2)(d)—"d" to be deleted and replaced by "Representative of the local branch of the Indian Medical Association". 16. P. 18. Item 25(3), line 6—"Medical Committee" to be deleted and replaced by "branch of the Indian Medical Association". 17. P. 24. Item 29—Delete the whole. Local Branch of the Indian Medical Association will act in this matter.

SCHEDULE I

18. P. 5. Item 6(4) "Inspection of clinic and waiting room accommodation"—In line 6 after the word "person", add, "not below the rank of a Medical Inspector". 19. P. 6, Item 6(7)(ii)—the whole "ii" to be deleted. 20. P. 7, Item 7, arrangements for practice"—In line 2, after the word "on" add "any insurance". 21. P. 8. Item No. 9(2)—"(2)" to be replaced by the following:—"(2) Except in the case of an alteration which results from the coming into operation of any Act of Parliament, the State Government shall, before making an alteration, consult the Indian Medical Association". Item No. 10(1)—What about consultation with the Indian Medical Association and its Agreement for a period of 2 years and 6 months' Notice? 22. P. 10. Item 16(1)—Line 3, after "Corporation", add "and the Indian Medical Association". Line 7, "2000" to be replaced by "1000". To be added "or 1500 with Assistant". "Persons" to be replaced by "workers and their families". 23. P. 11. Item 16(3)(iii)—Subject to subsequent replacement. (iv)—Payment in respect of the supply of drugs and appliances—ordinary medicines.

SCHEDULE II (FORM OF APPLICATION)

24. Page 1—Add one extra need "Whether members of the Indian Medical Association or not". P. 2—Delete 16(a) and (8).

SCHEDULE III

25. P. 1, Item (3)(a), 2nd line—"required by him" to be replaced by "necessary". 26. P. 3 Item 6, line 3—"2000" to be replaced by "1000" and 'persons' to be replaced by "Workers and their families". 1500 with Assistant.

XXII MYSORE MEDICAL CONFERENCE, CHIKMAGALUR

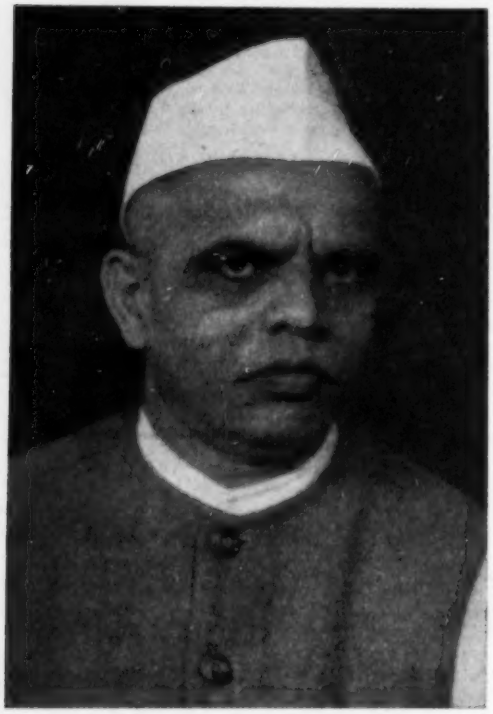
The 22nd Mysore Medical Conference and the Silver Jubilee Session of the Mysore Medical Association were held on 22nd, 23rd and 24th February 1954 at Chikmagalur. Sri A. G. Ramachandra Rao, Minister of Law, Labour and Education inaugurated the conference. Dr. B. Subbaramiah was the Chairman of the Reception Committee and Dr. Md. Shafi Mehkri presided over the conference.

In his inaugural address Sri Ramchandra Rao defined the duties of the medical man and outlined a programme for consideration. He said "The problem of health has been ably and comprehensively tackled in Japan, European countries and the U.S.A. In India, the long alien rule was responsible for its negligence and lopsided growth. Now that we have become a democratic sovereign Republic and have

established a welfare State, there is a heavy responsibility on all of us to wake up to the urgency of the problem and tackle the same in co-operation and collaboration with all others. You, by your profession and dedication, have taken upon yourselves a special responsibility in these vital aspects of life and therefore the nation looks forward to your services —individual and collective—with great expectancy.

May I suggest to you that you should draw up a plan of work for the next five years and collaborate with the Five-Year Plan. I may briefly indicate a few of the lines that should engage your attention.

1. Preference and priority to preventive treatment.
2. Instruction in hygienic habits and nutritional values of diet.
3. Free maternity benefit for the poor and the needy.
4. Family planning and child welfare schemes.
5. Medical Education.
6. Mass treatment and rural service,



SRI RAMCHANDRA RAO INAUGURATED THE CONFERENCE

Dr. Subbaramiah the Chairman of the Reception Committee extended sincere and cordial welcome to the guests and delegates. In course of his speech he referred to the scientific discussions that have been arranged in the conference and stressed upon the utility of conferences having such discussions by eminent members of the profession. He mentioned the historical importance of the district and described the physical and natural beauties abounding in the locality. He also described the medical facilities available there at the present time.

Dr. Mekhri, the president of the conference in course of his address said "In many advanced countries of the world, the doctor is no longer one who writes a prescription or doles out medicine, but he is the adviser to his patient more in matters of prevention of disease than the cure of diseases. His horizon has widened and he gives advice also on the proper bringing up of the children and of the families, and regarding their general hygienic and wholesome habits. He advises the parents about the kind of education to be given to the children to make them fit for the various vocations or walks of life, and also tells the parents which profession they or their children are not suited for. He advises the Corporations in matters of town planning, road making, sewage disposal, lighting of roads, schools, colleges and lecture halls, and about the lay-out, lighting and ventilation of theatres and parks and places of amusements. Thus the Doctor's advice is being sought from point of view of health and hygiene. The doctor is thus not only the custodian of the bodily health of his patients, but also has their mental make-up under his care. It is in this wider sphere that the services of the medical men and women should be utilised in all progressive countries.

INDUSTRIAL MEDICINE

Yet another aspect of professional work of medical men and women has gained considerable prominence in recent years with the advent of industrialisation of the country and the idea of a "welfare state". Industrial medicine has become a speciality and welfare health measures in connection with industrial workers have led to lesser accidents and disease, and also to better and greater factory production. Controversies have arisen as to the best method to be adopted by the State for securing this desirable result and we hope that suitable and practicable conclusions will be arrived at to the satisfaction of employers, workers and the doctors.

VOLUNTARY HEALTH INSURANCE

The President of the Indian Medical Association has appealed to the Members of all branches of the Association to devise ways and means in the early future to the formation and implementation of "Voluntary Health Insurance", which will be a boon to the vast masses of our country. I recommend this laudable idea whole-heartedly to my colleagues and would request a discussion on this subject in all our branches in Mysore State, and invite their opinion.

At the last All-India Medical Conference held at Hyderabad Major-General S. S. Sokhay, one of the recipients of Stalin Peace Prize for 1953 in his brilliant lecture on "Soviet Medicine", mentioned a few points which I noted down as suitable to be placed before you to-day.

MEDICAL RELIEF FOR THE MASSES

One of the important functions of doctors in Russia is to deliver public lectures on subjects of health. Every doctor has to give six hours of talk on health-education every month. There are said to be 12,000 Maternity and Child Welfare Centres in that country where all instructions are given for pre-natal care and ante-natal care. In Soviet Russia to-day there are about 300,000 fully qualified doctors, and each year a further number of 25,000 doctors is added to that number from the numerous medical Colleges. About 60 per cent of the doctors are women. The doctors in Government service are exceptionally well paid and so the question of private practice in their cases does not arise.

One hundred Roubles (approximate value of one Rouble is Re. 1-5-0) is spent per year per head for medical aid. Doctors in towns and cities are paid Roubles 1,000/- per month, but those posted in rural areas are paid Roubles 1,250/- or more. Higher degrees bring higher pay up to 10,000/- Roubles or more per month.

The Medical course in Colleges is of 6 years duration, the latter three years of the period being devoted to specialisation. Scholarships are given entirely on merit and the student with outstanding intelligence and industry automatically gets a scholarship which may range from 250/- to 700/- Roubles per month.

Further, the Ministry of Health owns Factories where all drugs, instruments and appliances needed for the State Hospitals are manufactured so that there is almost no need to import anything from outside.

These facts and figures give food for thought for all of us and give scope for comparison with the state of affairs in our own sub-continent. For one thing, the extremely low salary paid to medical men really deters many doctors from accepting Government service and the even more lowly paid jobs in rural areas positively discourage persons from volun-

teering for such service, however ardent they might feel to serve the poor and the needy in outlying parts of the country.

DR. MD. SHAFI MEHKRI PRESIDED OVER THE CONFERENCE

MEDICAL EDUCATION

The fact that even in a country like Russia the period of 6 years is set as the minimum period necessary to make a person fit to be a doctor must make us pause and reconsider our fantastic ideas and ideals of manufacturing half-baked products and setting them free on the general public, as practising doctors. Last year, at Bangalore, on a similar occasion, I had the privilege to make an appeal to all to take steps to prevent the curtailment of the course of medical studies to three years or less and this appeal still stands to-day, because this danger still exists.

For a sub-continent like ours, the number of doctors we now have is far from adequate. We have at present about 50,000 doctors in India. According to Chopra Report, our country requires 34,000 more doctors at present, and more in later years, as our population increases. The only way to meet this growing demand is to open more well-equipped medical colleges and admit more students, give them good training for the full 5 years as hithertofore and then give them such posts and such salaries or decent living wages, as would permit them to lead ordinary life in comfort so that they can devote themselves to research and to the service of suffering humanity without having to think of their own precarious existence.

In our State, we have just one Medical College and one Medical School. The opening of at least one medical college in Bangalore in the very immediate future, and perhaps another College at one of the bigger district headquarters in the near future are points which our Government may be requested to give serious and sympathetic consideration.

POST GRADUATE EDUCATION

It is now fully 30 years since our medical college came into existence, but till now, there has not been any move to introduce post-graduate courses of studies in this College. Even medical colleges that came into existence barely 8 to 10 years ago in other parts of India have introduced M.S. and M.B. Degrees in addition to specialist diplomas. For a thirty-year old College like ours, this is certainly a sad lapse, which should be made up with least possible delay. We should appeal to the Government to come to our rescue in this urgent matter.

The tendency all over India is to eventually abolish different grades of medical qualification because this has proved distasteful to all medical men and women, and so, many North Indian Universities have formulated a two-year supplementary course to enable Licentiate to obtain the M.B. Degree, so as to get them all under one category. We would request the authorities of our University to take the same generous and liberal view and introduce similar reasonable and convenient supplementary courses so that our L.M.P.'s may climb out of their inferiority complex and feel one with the rest of us.

FAMILY PLANNING

The population of our country, especially in the rural areas is rapidly increasing, but the capacity of earning and our ratio of food production have lagged behind, with natural repercussions on our national health. Strenuous attempts are being done to make our rural population wise about family planning, but I wish to state that the complicated, highly technical, and somewhat ornate methods of practical family planning now advised cannot be followed by our village folk or even our town folk. Those who are taking active interest in teaching these practical methods should devise simpler and cheaper methods to suit our masses, and only then their efforts will meet appreciable success.

HONORARY MEDICAL SERVICE

It is high time that we should seriously consider the introduction of Honorary System in our State Hospitals. The local doctors in the various District Hospitals may be given responsibility of attending to the Hospital routine and some of the staff of the District Hospitals can be diverted to render medical relief in rural areas where their help is really wanted and will be most beneficial. Other States are doing this and only imaginary difficulties envisaged by prejudiced minds are preventing this Honorary System being introduced in our State.

UNIFORMITY OF RULES OF MEDICAL CONDUCT

The Medical Council of India which met in October 1953 in New Delhi have arrived at certain decisions which will soon come into force. Among the main items of amendments are (1) Provision of the All-India Medical Registration for all medical men qualified in modern scientific medicine. (2) Establishment of reciprocity in regard to medical qualifications with other countries, (3) Uniformity of the courses of medical study both under-graduate and post-graduate, and standardisation of examination throughout the whole of India, and (4) Uniform code of medical ethics for all the States and some other subjects.

It is our opinion that while registration of medical men is being made compulsory, more privileges should be given to those who are registered and at the same time the rules of medical ethics should be enforced, especially the rule pertaining to, covering or associating with unqualified unregistered medical practitioners by registered medical practitioners. This should be classed as a misdemeanour and should be prohibited and should be penalised, and the Act should be applicable uniformly in all the States of Indian Union.

FIVE YEAR PLAN

Our Association is very anxious to play its legitimate part in the successful implementation of the Five Year Plan. I take this opportunity of requesting our Branches to appoint Sub-Committees which will give concrete suggestions in this important matter, so that we may pool our findings and place them before the Central Working Committee of our Association when they meet in Bangalore in the month of August this year.

DRUG CONTROL ACT AND ACT FOR PREVENTION OF FOOD ADULTERATION

Mysore was perhaps one of the first Indian States where the Act for control of drugs was promulgated and where

attempts were made, in a modest way towards suppression of spurious drugs. A direct effect of this was the existence of the then Government-owned Industrial and Testing Laboratory in Bangalore, which has latterly become a limited company. Our Governments should follow the tip from Soviet Russia and try to possess factories which will manufacture and supply all the drugs, instruments and appliances necessary for all State Hospitals and reduce import of such material from outside to a minimum, and also ensure that everything thus manufactured is maintained at the proper standard of purity, strength, efficacy and accuracy.

Yet another matter in which stringent rules should be made and law enforced is in the prevention of adulteration of foods. I need not dilate on this subject except to mention that the general well-being of our nation as a whole will greatly improve in a very short while if Food Adulteration Act is enforced in the proper spirit and without prejudice.

Progress of Preventive Medicine in the State

It is my privilege to mention that among all States Mysore was perhaps the first to adopt a combined method of prevention of disease and its care, in the many Government institutions now placed under the control of the Public Health Department. The officers of this Department in the earlier stages, with the guidance and co-operation, of American experts have done very valuable public service in the way of scientific survey of nutrition, health, helmenthiasis, maternity and child welfare problems and blindness in rural areas and have also been rendering suitable relief in these conditions. I am informed that this arrangement has met with universal approbation and several states are copying these activities. It is our duty to acknowledge the outstanding and highly beneficial and brilliant work done by the Department of Public Health.

Mysore is lucky in possessing perhaps the best equipped and the second biggest Maternity Hospital in the East. The number of Maternity Homes in Mysore State is perhaps greater than in any other Indian States. The State Hospitals in Bangalore and Mysore are manned by very highly qualified specialists who are at the head of all departments. But the District Hospitals require upgrading. It is necessary that each District Hospital should be a complete unit in itself with a Surgeon, Physician, a Pathologist, a Radiologist, and an E. N. T. Surgeon and an Ophthalmic Surgeon, each department being adequately equipped. This will take the load off the bigger State Hospitals from the general routine and enable the staff of the premier hospitals to do research and do, more highly specialised work in their various fields of medicine and surgery. The premier hospitals are sadly lacking in modern diagnostic and therapeutic appliances.

Rural Medical Relief

Dr. Subbaramiah has, in his speech generously referred to the work done by members of the Mysore Ophthalmological Society in rural areas. Many members of the Mysore Medical Association have also been rendering similar free voluntary medical service in the villages in their vicinities. It is necessary, or almost imperative that every doctor, whether a general practitioner or a specialist should set apart at least one or two weeks in a year to go to outlying villages and there examine and advice and treat the poor patients entirely free. Naturally, this his to be done with the co-operation of the local medical men and local bodies.

In addition to such charitable services the Government itself can very well organise rural medical relief activities with the help of voluntary bodies and depute doctors from those in service and supply drugs and equipment from the Medical and Public Health budgets for such mobile Health Units. Other States are doing this and are doing it successfully. In Hyderabad, there is a complete equipment including cots and bedding and linen for one hundred patients sent to rural areas, the doctors and specialists taking complete equipment for all the necessary examinations, treatment and operations in the rural areas. This is an idea that must be easily followed by all other States which are really anxious that medical aid should be taken to the door of the dweller of villages. I am confident the Members of the Indian Medical Association will be only too glad to participate and give their unstinted co-operation in each scheme sponsored by the Government for the benefit of the rural population.

Our Association

Now a few words about our Association. Dr. Subbaramaiah has told us that not all the doctors in his district are members of our Association. It is the same story in the whole of Mysore State. According to our count, there are about 2,000 doctors in Mysore Province, including doctors retired from Mysore Service or from service out of our State, and who have settled down with us, those who are in private practice and those who are in Government or other services. Our total membership is a meagre 700 or so and the figure is certainly very disappointing. I would appeal to all doctors of modern medicine to become members of this All-India Medical Association and keep up their membership. I would request each individual member of our Association to make personal effort to enrol as many doctors as possible, so that by the end of this year there should be no Registered Medical Practitioner of modern medicine in the State who is not a member.

Resolutions Passed at the Conference

1. (a) The Mysore Medical Association, Provincial Branch of I.M.A. resolves to request the Govt. of Mysore to provide rent free residential quarters to doctors in service or in lieu, a house rent allowance of not less than 10 per cent of the pay of doctor.

(b) The Mysore Medical Association, Provincial branch of I.M.A. resolves to request the Govt. of Mysore to provide a duty allowance of Rs. 30/- p.m. for (s. doctors doing duty in General and District Hospitals.

2. The Members of Mysore Medical Association form a Standing Advisory Committee to go into cases of members whose honour is jeopardized by any cause during the discharge of their professional duties.

BRANCH NOTES

ASSAM PROVINCIAL BRANCH—An emergent meeting of the Working Committee of the branch was held on 27-1-54 with Dr. H. K. Das in the chair. Eight members were present. The meeting condoled the death of (1) Dr. A. Guha of Palasbari, (2) Dr. B. D. Goswami of Kalaigaon, (3) Dr. Sukhomoy Sengupta of Cachar and (4) Dr. Sunil Bose of Calcutta. Dr. A. Barthakur was selected by the Central I.M.A. for Residencies abroad. The election of Dr. J. C. Das of Gauhati as president of the 5th Assam Provincial Conference was approved. Formation of 2 new branches was approved.

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The working committee of the branch met on 27-2-54 with Dr. J. C. Das in the chair. Ten members were present. Dr. P. Duarah pointed out that the grant of Rs. 500/- received from the centre is to be spent for propaganda work. The audited accounts of 1952-53 were adopted. It was resolved that the All-India Medical Conference be invited to Assam in 1955. Rules of the Assam Provincial Branch, Rules of the Assam Medical Relief Committee as drafted by the Sub-Committee were referred to the Council. A sub-committee was formed with 6 members to give constructive suggestions to the Government on Health Problems of the State for incorporation in the Five Year Plan.

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The 4th Annual Council meeting of the branch was held on 27-2-54 with Dr. B. Barooah in the chair. Twenty-three members were present. The meeting condoled the death of (1) Dr. T. S. Tirumurthi, (2) Dr. A. K. Sen, (3) Dr. S. K. Sen Gupta, (4) Dr. B. D Goswami, (5) Dr. Sunil Bose, (6) Dr. A. Guha. The formation of 4 new branches was approved. The annual report and the audited accounts for 1952-53 were adopted. The Budget for 1953-54 was approved. The draft rules of the Assam Provincial Branch was approved with amendments. The Council approved the election of Dr. J. C. Das as president for 1953-54. Office-bearers

of the Assam Medical Relief Committee were elected. The report of the Committee was adopted.

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The Working Committee of the branch was held on 12-4-54 at Gauhati with Dr. J. C. Das in the chair. Seven members were present. It was decided to give effect to the resolutions passed at the Prov. Conference. The House also decided to give immediate effect to the new Rules and Bye-laws of the State branch and A.M.R.C. Dr. G. S. Das was requested to continue for the current year in the Assam Medical Relief Committee in place of Dr. P. C. Duarah who was also elected secretary of the committee.

BAGNAN BRANCH—The branch was started in December 1952. The Secretary's report for the year 1952-53 shows that good progress has been made though the branch is still in its infant stage. In course of a year, the branch has enlisted 22 members in an area where the total number of practitioners is only 30. Sixteen meetings were held during the year under review and interesting clinical subjects were discussed. The financial position of the branch is well balanced. A rural conference was held on 24-4-54 under the auspices of the branch. The branch covers an area of 7 unions with 1 lakh 30 thousand people. There are 3 charitable dispensaries, 1 mobile medical unit, 2 relief organisations, 1 A. G. Hospital (20 bedded), 1 maternity centre and a Public Health Circle.

BAJALI BRANCH—The annual general meeting of the branch was held on 23-2-54 with Dr. N. K. Sarma in the chair. Dr. P. N. Sharma was elected secretary of the branch in place of Dr. R. K. Das resigned. Dr. P. C. Talukdar was re-elected president. The Government was requested (1) to take vigorous steps against quackery, (2) to see that doctors get registered before they are given employment, (3) to abolish imposition of Sales Tax on medicine.

BHUBANESWAR BRANCH—The branch was inaugurated at a meeting held on 2-4-54. Ten doctors were present. Office-bearers for the year 1954-55 were elected with Dr. K. N. Misra as president and Dr. S. C. Nag as secretary.

BONGAON BRANCH—A meeting of the branch was held on 28-3-54. Dr. J. R. Dhar presided. Dr. A. K. Sinha was congratulated on his being elected as a member of the West Bengal Pharmacy Council.

CALCUTTA BRANCH—A meeting of the Executive was held on 9-10-53 with Dr. A. K. Bose in the chair. Sixteen members were present. Twenty-one new members were admitted, twenty-one members resigned.

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The adjourned special meeting of the Executive Committee was held on 12-10-53. Eleven members were present. The report of the Examination Enquiry Committee was discussed and accepted with some modifications.

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A meeting of the Executive Committee of the branch was held on 12-11-53. Eighteen members were present. Twelve new members were enrolled. The draft annual report for the year ending 30-9-53 and the draft Budget for 1953-54 were accepted with slight modifications. The audited accounts for the year ending 30-9-53 were adopted. The date for the annual general meeting was fixed.

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A Special meeting of the Executive Committee was held on 21-11-53 with Dr. A. K. Bose in the chair. Thirteen members were present. The members condoled the death of Dr. G. C. Chatterjee and Dr. Sunil C. Bose.

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An emergent meeting was held on 10-12-53 with Dr. A. N. Roy in the chair. Twenty-one members were present. The members condoled the death of Dr. A. N. Ghosh, one of the foundation members of the Association. The draft rules of the Association as approved by the Working Committee were considered and approved with amendments.

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The first meeting of the Executive Committee was held on 14-12-53 with Dr. N. K. Munshi in the chair. Twenty-one members were present. Eleven new members were admitted. Eight members resigned. Eight sub-committees were formed. Legal liabilities of doctors in E. S. I. scheme and the patenting of I.M.A. crest were referred to the Medico-political sub-committee.

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The 2nd meeting of the Executive Committee was held on 12-1-54 with Dr. N. K. Munshi in the chair. Twenty-nine members were present. Twelve new members were enrolled, eight resigned.

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The 3rd meeting of the Executive Committee of the branch was held on 9-2-54 with Dr. N. K. Munshi in the chair. The members condoled the death of Dr. B. K. Chatterjee, Dr. A. M. Sen, Dr. S. Gupta, Dr. S. N. Ray and Mrs. K. K. Sen Gupta, the wife of Dr. K. K. Sen Gupta, a past president of the branch.

The 4th ordinary meeting of the Executive Committee of the branch was held on 9-3-54 with Dr. N. K. Munshi in the chair. Twenty-six members were present. Eleven new members were admitted. Six members resigned. The report of the Health Sub-Committee was adopted with some modifications. The report of the Medico Political and of the Social and Entertainment Sub-committees were confirmed. The formation of Koshba branch was discussed and as Kashba is within the municipal limits of Calcutta, it was suggested that instead of a branch, a zonal committee might be formed there.

CHETTINAD BRANCH—The annual meeting of the branch was held on 15-4-54 with Dr. D. O. Sendel in the chair. The annual report was adopted and office-bearers were elected with Dr. S. Subramanian as president and Dr. M. Srinivasaba as secretary. Dr. G. A. Naidu of Mathurai gave a talk on "Some Recent Trends in the Treatment of Skin Diseases".

COIMBATORE BRANCH—An emergent meeting of the branch was held on 19-3-54 with Dr. P. N. Ramaswami Naidu in the chair. Seventy-five members were present. Dr. Naidu introduced Dr. S. C. Sen, President I.M.A. to the members and requested him to give his views on the Panel System of the E. S. I. Scheme. Dr. Sen appealed to the general practitioners who wanted to be included in Panel, to give it an honest trial.

COOCH BEHAR BRANCH—The annual report of the branch for the year 1952-53 shows that membership increased from 29 to 100. Seven clinical meetings were held along with Refresher Courses. Many interesting Clinical subjects were discussed. A *Blood Bank* has been started through the earnest efforts of the members. It is an extraordinary achievement.

DALTONGANJ BRANCH—A refresher course lecture was delivered by Dr. A. K. Guha from Patna on 17-3-54. Dr. Guha spoke elaborately on the clinical aspect of the Diagnosis of Amoebiasis. Thirty doctors were present.

DHANBAD BRANCH—A meeting of the branch was held on 14-3-54 with Dr. H. P. Mukherji in the chair. Twenty-five members were present. The question of the retention of the services of the Medical Inspectors which was referred to the C.M.O., Jharia Mines Board with no satisfactory result was placed before the Privilege Committee for consideration as to what steps should be taken in the matter. Regarding Provident Fund of part time colliery doctors, the result of the interview with the Deputy Minister of Labour was communicated to the members.

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Health week was observed by the branch from the 18th to the 24th April 1954. Public meetings were held daily and addressed by the members of the branch, on sanitation, prevention of epidemics and tuberculosis, malaria and maternal and child welfare. Baby shows were held and magic lantern shows were also given.

DOOARS BRANCH—The annual general meeting of the branch was held on 28-3-54. Dr. S. N. Das Pal presided. Dr. T. M. Ghosh inaugurated the meeting. At the outset, the death of the president Dr. G. N. De was condoled. The annual report showed that there were 172 members on the roll. Three executive meetings were held during the year. The following scientific papers were read, (1) Surgical Treatment of Fractures in Tea Gardens by Dr. F. Mahler, (2) Diarrhoea in Tea Gardens by Dr. S. S. Bagchi, (3) Infective Hepatitis by Dr. K. P. Roy, (4) Short note on Pathology of Pulmonary Tuberculosis by Dr. B. Nandy, (5) Pulmonary Amoebiasis versus Pulmonary Tuberculosis by Dr. P. N. Deb. Office-bearers for 1953-54 were elected with Dr. S. N. Das Pal as president and Dr. N. C. Bagchi as secretary.

DOOM DOOMA BRANCH—The annual conference of the branch was held on 26-9-53 with Dr. R. K. De in the

chair. Office-bearers were elected with Dr. R. K. De as president and Dr. A. K. Banerjee as secretary. A paper on "Adrenal Cortical Hormone" and a case note of a fatal case of acute intestinal obstruction were read.

JAGATDAL BRANCH—A meeting of the branch was held on 6-4-54 with Dr. S. C. Bhattacharjee in the chair. Dr. U. C. Chakraborty of Calcutta delivered a lecture on "Common Surgical Emergencies with reference to children."

K. G. P. LOCAL BRANCH—Dr. N. F. Lilanwalla, Physician K. G. F. Hospital gave a lecture on "Pain in the Abdomen in Children" on 27-2-54. Dr. Miss E. Shoemaker of Kolar presided. Seventeen members were present. Medical films on "Functional Treatment of Tuberculosis of Spine and Hip" were screened on 17-3-54. Dr. Mirle Puttaiya of Bangalore spoke to the members on "Recent Trends in the Treatment of Dehydration" at a meeting of the branch held on 27-3-54. Dr. R. R. Nagendran presided.

KALYANI BRANCH—Under the auspices of the branch, a series of refresher course lectures in Tuberculosis has been arranged to be held at Kanchrapara Tuberculosis Hospital on every Thursday with effect from 3-6-54. The lectures will be given by the specialist staff of the Kanchrapara T. B. Hospital of the Government of West Bengal. This series will be further continued by inviting specialists from Calcutta.

KARWAR BRANCH—The report of the branch shows that during its life of 18 years, it took a leading part in conducting a free-eye camp, it conducted health weeks, arranged baby shows, started child welfare centre and family planning clinic with the help of Mohila Mondal. The first Karwar district medical conference was held on 14-1-54. Thirty-four members attended it.

KISHANGANJ BRANCH—A medical conference was held under the auspices of the branch on 25-4-54. Seventy doctors were present. Dr. S. P. Mukherjee, Civil Surgeon, Purnea, presided. Dr. S. Kumar was the chairman of the Reception Committee. The death of Dr. J. Prosad of Monghyr and Dr. K. N. Lall of Bettiah was condoled. Dr. A. K. Sen spoke on Asthma, Dr. S. C. Majumdar spoke on "Sulpha Drugs", Dr. J. N. Mukherjee read a case note on "Osteogenic Sarcoma."

KOTHAGUDIUM BRANCH—A clinical meeting of the branch was held on 19-3-54 with Col. T. C. Ramchandani in the chair. Dr. (Mrs.) Eshwari Kuppuswamy gave a talk on the Toxaemias of Pregnancy. The speaker laid stress on the expectant method of treatment and warned against obstetric interference in early stages.

MADURA BRANCH—A meeting of the branch was held on 25-2-54 with Dr. A. S. Annamalai in the chair. Dr. R. V. Rajam, Director, Venereal Department, Government General Hospital, Madras, gave an illuminating lecture on congenital syphilis.

MANGALDAI BRANCH—A meeting of the local physicians and members of the branch was held on 23-1-54 to condole the sudden and untimely death of Dr. B. Goswami, M. O. Kalaigaon on 21-1-54.

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A meeting of the branch was held on 2-12-53 with Dr. J. N. Chakravartee in the chair. Seven members were present. Members discussed various matters.

MEERUT BRANCH—A meeting of the branch was held on 19-4-54 to place on record its deep sense of grief at the very sad and sudden death of Dr. M. L. Goel, a very old and prominent member and also an ex-president of the branch.

MONGHYR BRANCH—A meeting of the branch was held on 18-4-54 to condole the sad death of Dr. J. N. Sinha, the president of the branch. His contribution to the cause of the association was immeasurable.

MORVI BRANCH—A meeting of the branch was held on 7-3-54. Dr. D. C. Oza presided. Ten members were present. Dr. Miss K. M. Patel read a paper on "Ideal Connnement in Rural Practice."

MYSORE BRANCH—The Secretary's report for 1952-53 shows that membership increased by 107. During the year 3 Provincial Council meetings and 4 working committee meetings were held. Sub-committees to go into refresher courses, revision of rules, selection of candidates for residency training, met and carried out their work. Of 18 candidates applying for internships, 7 were selected. A Library was started.

NIZAMABAD BRANCH—A meeting of the branches, Nizamabad and Allahabad was held on 28-3-54 under the presidentship of Dr. L. R. Deshpande of Nizamabad. Dr. Gaffari of Adilabad and other doctors held a discussion on "Abdominal Emergencies in General Practice."

ORISSA STATE BRANCH—The Working Committee of the branch met on 24-3-54 with 8 members attending. In the absence of any branch inviting the Annual Conference, it was decided that the Cuttack branch would hold the conference there by the middle of June 1954. The elected members from this branch to the Governing Body of the S. C. B. Medical College, Cuttack were requested to send proceedings of all meetings of the said Governing Body to the Secretary, Orissa State Branch for information of the working committee so that necessary instructions might be given to them from time to time regarding their line of action.

SHIMOGA BRANCH—A meeting of the branch was held on 7-4-54. Dr. I. Chandrasekaraian, Director of Public Health, Mysore spoke on "The Future of Health Services."

TENALI BRANCH—A meeting of the branch was held on 24-4-54 with Capt. M. Imaduddin in the chair. Dr. T. Namassivaiah showed in a boy of 3 years, a congenital tumour in the lumbar spinal region for which splaster was recommended. Dr. B. S. N. Sastry showed a case of Ariboflavinosis in a girl of 8 years, complicated with Fungus infection and another case of Proptosis in a boy of 6 years due to Retrobulbar infection in the left eye. Dr. C. Krishnaiah showed a specimen of tubercular kidney which he operated. He described a case of a rupture of uterus in which a loop of small intestine was found gangrenous. Next a debate on 'Tobacco Smoking" was opened. As Capt. Imaduddin was transferred from there, a send off speech was given by Major K. Vulakki.

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A meeting of the branch was held on 21-3-54 with Major K. Vulakki in the chair. Dr. C. Krishnaiah demonstrated specimens of Hydronephrosis in a foetus which was the cause of difficulty labour. Next the symposium on Peptic Ulcer was opened by Dr. B. Pullaiah. Dr. K. Veeraiah, Dr. S. Suryanarayana Sastry, Capt. B. V. Rao participated.

* * * *

On 28-3-54, Dr. K. S. Sivarama Krishna Iyer delivered a lecture on "Common Errors in Obstetric Practice". Dr. (Miss) Margaret Round of Ponnur presided.

TIRUNELVELI BRANCH—A meeting of the branch was held on 23-2-54. Fifty-five members were present. Dr. R. V. Rajan gave an interesting lecture on the treatmtent of Early Syphilis, Infantile and Antenatal.

WARANGAL BRANCH—Twenty-four members of the branch visited the community Project Area at Mulug, the Anti-Malaria Field Hospital at Chelvai. They inspected the Medical Unit when Dr. Azim, the medical officer in charge explained the activities of the medical unit. A clinical meeting was then held at the Inspection Bungalow with Dr. B. Dayanand Rao in the chair. Dr. N. V. Nagabhushanam spoke on the Duties and Responsibilities of the Practitioner and the Public Health of the Community. Next Dr. V. Ramamohana Rao read a paper on Physiognomy in Diseases.

XX ANDHRA PROVINCIAL MEDICAL CONFERENCE

The 20th Andhra Provincial Medical Conference will be held at Visakhapatnam in the first week of June, 1954. There will be a symposium on Hypertension in the Scientific Sessions of the Conference and a prize in memory of Dr. Y. Subbarao will be given for the best essay on "Use and Abuse of Antibiotics."

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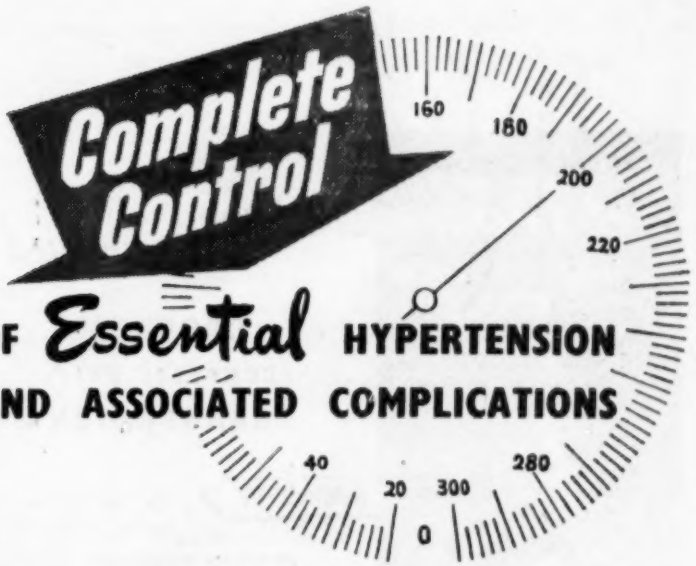

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[Kramer, Gehl, Nilsonn, Riecker & Ullrich *of the Physiological Institute of the University of Marburg*: Klinische Wochenschrift, Germany, 31, 41/42]

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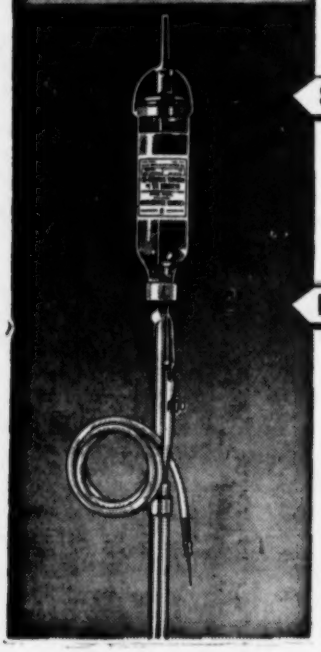

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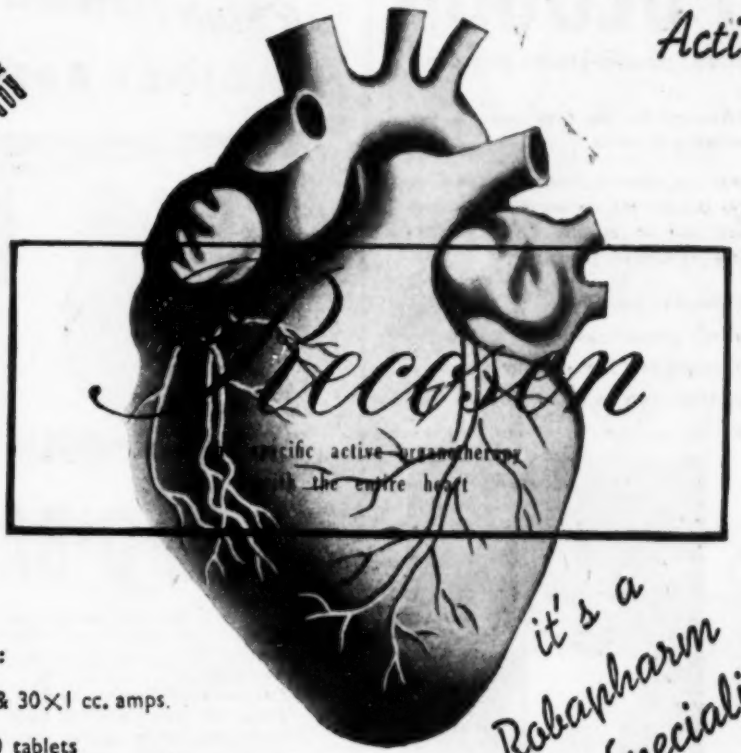

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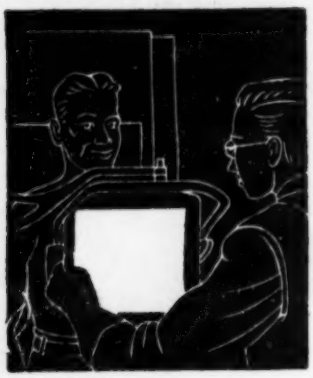

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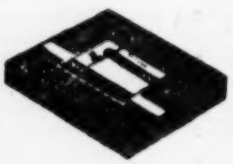

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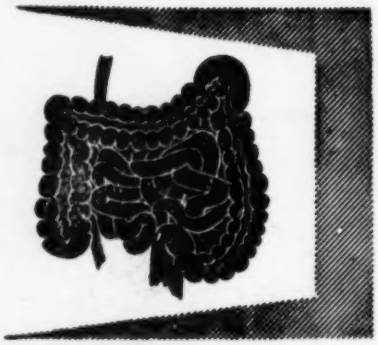

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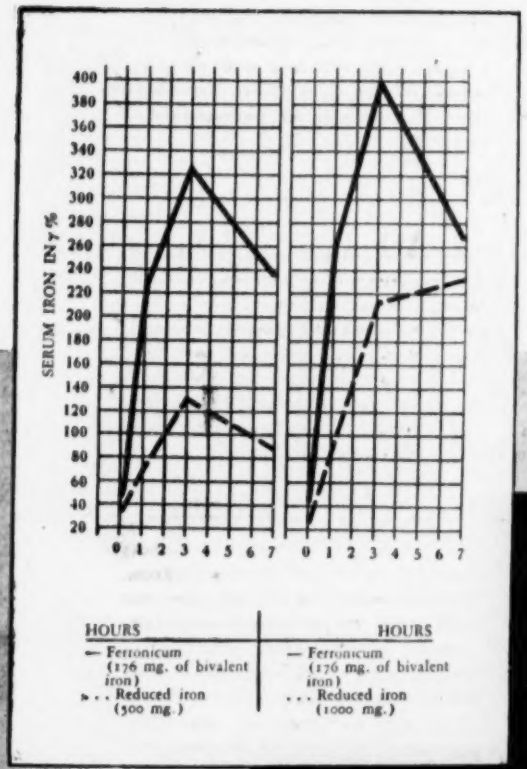

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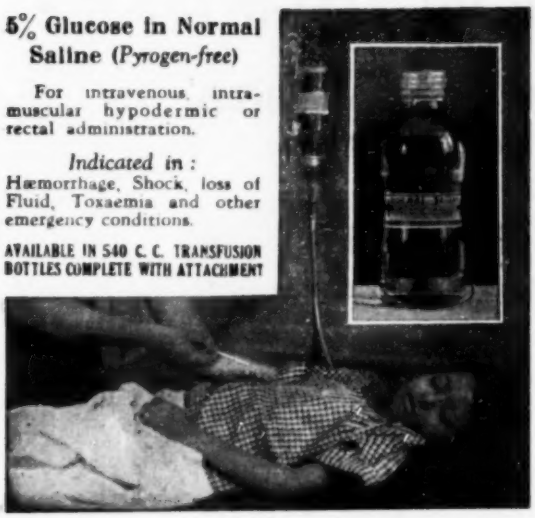

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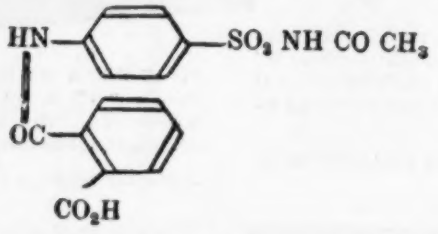

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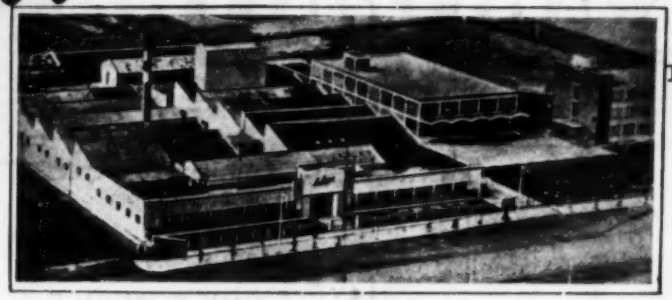

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